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ABSTRACT

This monograph reviews various strands of research on school effectiveness in developed and developing countries. It addresses a central theme of educational planning: how deliberate actions by policymakers, school administrators, teachers, and parents can help in the attainment of educational goals. Chapter 1, "Conceptualization: Perspectives on School Effectiveness," defines the concept of school effectiveness. The definitions implied in empirical school-effectiveness research are compared with economic and organizational definitions. Chapter 2, "Research: A Review of the Evidence from Developed and Developing Countries," reviews the various strands of educational-effectiveness research, with special attention to studies carried out in developing countries. Chapter 3, "Theory: School Effectiveness and Perspectives on Planning," relates the research evidence to more established social-scientific theory to discover the underlying mechanisms of what makes schooling effective. Chapter 4, "Application: Use of the School-Effectiveness Knowledge Base for Monitoring and Evaluation Procedures," examines the use of the identified effectiveness-enhancing factors as a model for school improvement. Implications for educational planners are summarized in a brief final chapter. The report concludes that research findings should be applied, in particular, to monitoring and evaluation practice. Also contains examples of national educational indicator systems and school self-evaluations, along with 140 references. (WFA)

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Improving School Effectiveness. Fundamentals of Educational Planning

Jaap Scheerens

2000

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Fundamentals of Educational Planning

Improving school effectiveness

Jaap Scheerens

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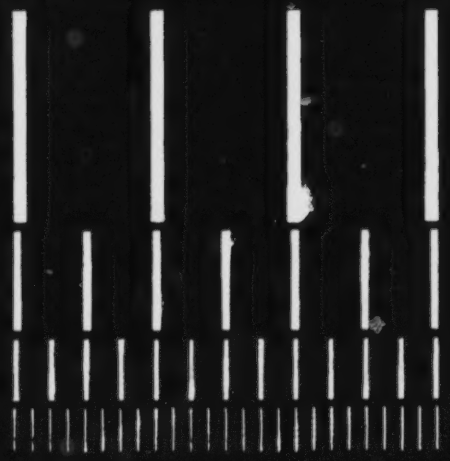

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Improving school effectiveness

Jaap Scheerens

Paris 2000
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Fundamentals of educational planning

The booklets in this series are written primarily for two types of clientele: those engaged in educational planning and administration, in developing as well as developed countries; and others, less specialized, such as senior government officials and policy-makers who seek a more general understanding of educational planning and of how it is related to overall national development. They are intended to be of use either for private study or in formal training programmes.

Since this series was launched in 1967 practices and concepts of educational planning have undergone substantial change. Many of the assumptions which underlay earlier attempts to rationalize the process of educational development have been criticized or abandoned. Even if rigid mandatory centralized planning has now clearly proven to be inappropriate, this does not mean that all forms of planning have been dispensed with. On the contrary, the need for collecting data, evaluating the efficiency of existing programmes, undertaking a wide range of studies, exploring the future and fostering broad debate on these bases to guide educational policy and decision-making has become even more acute than before. One cannot make sensible policy choices without assessing the present situation, specifying the goals to be reached, marshalling the means to attain them and monitoring what has been accomplished. Hence planning is also a way to organize learning: by mapping, targeting, acting and correcting.

The scope of educational planning has been broadened. In addition to the formal system of education, it is now applied to all other important educational efforts in non-formal settings. Attention to the growth and expansion of education systems is being complemented and sometimes even replaced by a growing concern for the quality of the entire educational process and for the control of its results. Finally, planners and administrators have become more and more aware of the importance of implementation strategies and of the role of different regulatory mechanisms in this respect: the choice of financing methods, the examination and certification procedures or various other regulation and incentive structures. The concern of planners is twofold: to reach

a better understanding of the validity of education in its own empirically observed specific dimensions and to help in defining appropriate strategies for change.

The purpose of these booklets includes monitoring the evolution and change in educational policies and their effect upon educational planning requirements; highlighting current issues of educational planning and analyzing them in the context of their historical and societal setting; and disseminating methodologies of planning which can be applied in the context of both the developed and the developing countries.

For policy-making and planning, vicarious experience is a potent source of learning: the problems others face, the objectives they seek, the routes they try, the results they arrive at and the unintended results they produce are worth analysis.

In order to help the Institute identify the real up-to-date issues in educational planning and policy-making in different parts of the world, an Editorial Board has been appointed, composed of two general editors and associate editors from different regions, all professionals of high repute in their own field. At the first meeting of this new Editorial Board in January 1990, its members identified key topics to be covered in the coming issues under the following headings:

1. Education and development.
2. Equity considerations.
3. Quality of education.
4. Structure, administration and management of education.
5. Curriculum.
6. Cost and financing of education.
7. Planning techniques and approaches.
8. Information systems, monitoring and evaluation.

Each heading is covered by one or two associate editors.

The series has been carefully planned but no attempt has been made to avoid differences or even contradictions in the views expressed by the authors. The Institute itself does not wish to impose any official doctrine. Thus, while the views are the responsibility of the authors and may not always be shared by UNESCO or the IIEP, they warrant attention in the international forum of ideas. Indeed, one of the purposes

of this series is to reflect a diversity of experience and opinions by giving different authors from a wide range of backgrounds and disciplines the opportunity of expressing their views on changing theories and practices in educational planning.

School effectiveness is a difficult concept to define, and, once defined, is of a nature that is difficult to measure.

In this rich study, Jaap Scheerens looks at most aspects of the school effectiveness panorama, thus providing a useful overview for educational planners.

The author uses the school-effectiveness knowledge base to examine relevant approaches to improving effectiveness, although never loses sight of the fact that each situation is specific. He concedes that there seems to be more leeway for action the closer one gets to the school level, thus making planning for effectiveness difficult for those operating at the above-school level. Bearing this in mind, he suggests that a multi-level approach might be the most appropriate, particularly for developing countries. The importance of school self-evaluation is emphasized, as is the fact that the evaluation process in itself can contribute to enhancing effectiveness. On the basis of this booklet, planners will certainly be better geared for dealing with the different factors involved in improving school effectiveness.

The IIEP would like to thank Professor Scheerens for sharing his insights and knowledge of this field in writing for the Fundamentals of Educational Planning series. We are also grateful to Professor Neville Postlethwaite, the editor of this number, for his participation in its preparation.

Gudmund Hernes
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Preface

In the last decade of the 1900s, there was a burgeoning literature on school effectiveness. As the work of educational planners has moved from increasing school enrolments to the improvement of the quality of schooling, so the planner has had to become interested in school effectiveness. What then is an effective school? Various authors have used different definitions of 'effective' and it is often difficult to distinguish among the many definitions. Furthermore, the reader must wonder whether or not the definitions make sense. It is clear that a school with an intake of children from good home backgrounds will have an easier time in getting them to learn than a school where the children all come from poor home backgrounds. What is of interest to most planners is the identification of factors or variables that enhance learning in all schools, irrespective of the background of the children that attend them. In particular planners are interested in those factors that occur in 'poor' home background schools that result in high achievement for the pupils. What are these factors, are they generalizable to all schools, and what are the likely costs for a Ministry of Education should it wish to have these factors in all schools? There is also the added problem that a school has many different school subjects and manifold objectives: cognitive, affective and social. Does a factor or variable affect only one subject area or set of objectives, or can it affect all of them?

The whole area of this kind of thinking and research is characterized by many approaches, concepts and models. It is difficult even for those involved to have a clear grasp of the pros and cons of each of them.

The IIEP invited Jaap Scheerens from the University of Twente in the Netherlands, a recognized authority in the area of effective schooling and school management, to write a short booklet explaining this complicated field to educational planners. Professor Scheerens has not only described the different ways in which the term 'effective'

is used but also the different 'concepts' and 'models' that are used in this type of research. He then has gone on to relate the findings of research in this area to synoptic planning, choice theory, and retroactive planning. Finally, he has presented a host of findings in this research area but cautions the reader and user to act prudently when making adaptations.

It is clear that each system of education needs to conduct its own research into the identification of variables and factors associated with 'effectiveness'. It is hoped that this issue of the Fundamentals of educational planning will help educational planners not only to work their way through the different types of research, but will encourage them to undertake such research themselves.

T. Neville Postlethwaite
Co-General Editor

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Introduction

This monograph addresses a central theme of educational planning: how can deliberate actions by policy-makers, school heads, teachers and parents help in the attainment of educational goals?

Answers are given on the basis of the results of empirical research, classified under headings such as: 'educational productivity', 'school effectiveness', 'education production functions' and 'instructional effectiveness'. Since 1980, empirical research has yielded a body of knowledge that has provided information on which malleable factors 'matter most' and which other factors have a more marginal impact.

However, careful judgement of the available knowledge base is required, as there are particular limitations and caveats inherent in the above-mentioned research traditions. For example, most empirical research has been conducted at the primary and lower-secondary levels, and the outcome variables chosen have most often been the basic subjects, such as mother tongue and arithmetic/mathematics.

The aims of this study are therefore the following:

- to provide a conceptual basis for defining school effectiveness;
- to describe the school and classroom-level variables that are expected to 'work' in education and reflect on the ways in which policies may enhance school effectiveness;
- to review the available research evidence in terms of the relationships between particular malleable conditions and educational achievement;
- to reflect upon the theoretical models used to explain why certain factors are supposed to work and look at which of these models could yield practicable levers for enhancing school effectiveness;
- to indicate practical applications of the school-effectiveness knowledge base for educational planners.

In the first chapter the concept of school effectiveness is defined. The definitions implied in empirical school-effectiveness research are compared to economic and organizational definitions. This leads to a conceptual map, in which 'causes' or means, and 'effects' or achieved goals of schooling, are distinguished as the two basic factors of school effectiveness. Other important aspects to be taken into account are the concept of the 'added value' of schooling and the fact that the criteria used to judge whether schools are effective are relative rather than absolute.

In Chapter 2 the knowledge base that has resulted from various strands of educational-effectiveness research is reviewed. Specific attention is given to studies carried out in developing countries. Although the more qualitative reviews of the research evidence have tended to agree on a set of effectiveness-enhancing factors, quantitative research syntheses and international comparative studies leave considerable uncertainty concerning the impact and generalizibility of most of the factors, particularly the resource-input factors and school organizational conditions.

In the third chapter the research evidence is related to more established social-scientific theory in order to discover the underlying mechanisms of what makes schooling effective. Three different interpretations of the rationality principle are discussed: synoptic planning; the implications of public-choice theory; and retroactive planning. Although the research evidence generally supports the position that enhanced rationality explains school effectiveness, this conclusion is interpreted against the fact that most of the evidence is based on education systems in which basic material and human resource conditions are well in place.

The fourth chapter takes a look at the use of the identified effectiveness-enhancing factors as a model for school improvement. Even though this approach has provided positive results, the chapter focuses on a more prudent application, in which the identified factors are merely used as targets for educational monitoring and evaluation. This approach leaves room for cultural and local adaptation of outcomes and is easier to reconcile with a more detached attitude of

central educational planners in functionally decentralized education systems. The use of process indicators within the context of national indicator systems and school self-evaluation is discussed.

In a brief final chapter the implications for educational planners are summarized.

I. Conceptualization: Perspectives on school effectiveness[1]

Introduction

It is common sense that an effective school is roughly the same as a 'good' school. On the basis of this notion, a more precise definition of school effectiveness has been developed in empirical research studies. Different nuances are provided by the different perspectives of the various disciplines, most notably economics and organizational science. Yet despite these different perspectives, a relatively simple schema, consisting of a set of malleable conditions of schooling (causes) and a small range of types of criteria (effects), may be considered as the basis of the definition.

A general definition

School effectiveness refers to the performance of the organizational unit called 'school'. The performance of the school can be expressed as the *output* of the school, which in turn is measured in terms of the average achievement of the pupils at the end of a period of formal schooling. The question of school effectiveness is interesting because it is well known that schools differ in performance. The next question is how much they differ, or, more precisely, how much schools differ when they are more or less equal in terms of pupils' innate abilities and socio-economic background.

A somewhat different statement of the principle of 'fair' comparison between schools can be made by assessing the *added value* of a period of schooling. This means assessing the impact of

1. Parts of this chapter are an updated version of Chapter 1 of Scheerens (1992), *Effective schooling. Research theory and practice*, published by Cassell (London).

schooling on pupils' achievement, when that achievement can be uniquely attributed to having attended school A rather than school B. In school-effectiveness research, however, assessing the 'net' or value-added differences between schools is not enough. In this branch of educational research, the really interesting questions start once one has established that there is significant variation: *why* does school A do better than school B, if the differences are not due to differences in the student population of the two schools?

Different strands of educational-effectiveness research have concentrated on different types of variables to answer this question. Economists have concentrated on resource inputs, such as per-pupil expenditure. Instructional psychologists have investigated classroom management, such as time on task and variables associated with instructional strategies. General education experts and educational sociologists have looked at aspects of school organization, such as leadership style.

Before going on to explain these different strands of educational-effectiveness research and their subsequent integration into multidisciplinary and multi-level educational-effectiveness studies, a few basic characteristics of the emergent definition of school effectiveness should be highlighted.

It should be noted, first of all, that the concept of school effectiveness should be seen as a formal, 'empty', concept that is indiscriminate with respect to the kinds of measures of school performance that are chosen. Since the literary meaning of effectiveness is *goal attainment*, the implicit assumption is that the criteria used to measure performance reflect important educational objectives. Of course, opinions about what these criteria should be may differ, and consequently an easy line of attack on school-effectiveness research is that it has failed to address important educational objectives. In actual practice, achievement in basic subjects such as arithmetic/mathematics, science and vernacular or foreign languages, is the yardstick chosen in the large majority of all strands of empirical educational-effectiveness studies. Secondly, measures of school effectiveness are based on comparative rather than absolute standards.

'Effects' are expressed in terms of adjusted mean differences between schools or in terms of percentage of 'explained' variation between schools. The implication is that school-effectiveness studies, carried out within a particular national context, do not say anything about the actual level of educational achievement in that country. In terms of performance levels, the definition of an effective school for country X could be quite different for country Y.

Finally, in the general description of school effectiveness and school-effectiveness research, it is important to note that school effectiveness is a causal concept. Some authors therefore make an explicit difference between *school-effectiveness* research on the one hand and *school effects* research on the other (cf. Purkey and Smith, 1983). In school-effectiveness research not only are differences in overall performance assessed, but the additional question of causality is raised: which school characteristics lead to relatively higher performance, when the characteristics of the student populations are otherwise constant?

In subsequent chapters the various strands of educational-effectiveness research that have contributed to the current multidisciplinary and multi-level conceptualization of school effectiveness will be described in more detail.

In summing up, school effectiveness is seen as the degree to which schools achieve their goals, in comparison with other schools that are 'equalized', in terms of student-intake, through manipulation of certain conditions by the school itself or the immediate school context.

Economic definitions of effectiveness

In economics, concepts such as effectiveness and efficiency are related to the production process of an organization. Put in a rather stylized form, a production process can be summed up as a 'turnover', or transformation of 'inputs' into 'outputs'. *Inputs* into a school or school system include pupils with certain given characteristics and financial and material aids. *Outputs* include pupil attainment at the

end of schooling. The transformation *process* or *throughput* within a school can be understood as all the instruction methods, curriculum choices and organizational preconditions that make it possible for pupils to acquire knowledge. Longer-term *outputs* are denoted by the term '*outcomes*', see *Table 1*.

Table 1. Analysis of factors within the education production process

Inputs	*Process*	*Outputs*	*Outcomes*
Funding	Instruction methods	Final primary school test scores	Dispersal on the labour market

Effectiveness can now be described as the extent to which the desired level of output is achieved. *Efficiency* may then be defined as the desired level of output against the lowest possible cost. In other words, efficiency is effectiveness with the additional requirement that this is achieved in the cheapest possible manner. Cheng (1993) has offered a further elaboration of the definitions of effectiveness and efficiency, incorporating the dimension of short-term output versus long-term outcomes. In his terms: *technical* effectiveness and efficiency refer to "school outputs limited to those in school or just after schooling (e.g. learning behaviour, skills obtained, attitude change, etc)", whereas *social* effectiveness and efficiency are associated with "effects on the society level or the life-long effects on individuals (e.g. social mobility, earnings, work productivity)" (ibid., p. 2). If one combines these two dimensions, four types of school output can be distinguished (see *Table 2*).

Table 2. Distinction between school effectiveness and school efficiency, cited from Cheng (1993)

	Nature of school output	
Nature of school input	In school/Just after schooling Short-term effects Internal (e.g. learning behaviour, skills obtained)	On the society level Long-term effects External (e.g. social mobility, earnings, productivity)
Non-monetary (e.g. teachers, teaching methods, books)	*School's societal effectiveness*	*School's technical effectiveness*
Monetary (e.g. cost of books, salary, opportunity costs)	*School's technical efficiency* (internal economic effectiveness)	*School's societal efficiency* (external economic effectiveness)

It is vital for the economic analysis of efficiency and effectiveness to be able to express the value of inputs and outputs in terms of money. In order to determine efficiency, it is necessary to know the input costs such as teaching materials and teachers' salaries. When the outputs can also be expressed in financial terms, efficiency determination resembles a cost-benefit analysis (Lockheed, 1988, p. 4). It has to be noted, however, that a strict implementation of the above-mentioned economic characterization of school effectiveness runs up against many problems.

These begin with the question of how one should define the 'desired output' of a school, even if one concentrates on the short-term effects. For instance, the 'production' or returns of a secondary school can be measured by the number of pupils who successfully pass their school-leaving diploma. The unit of measurement is thus the pupil having passed his or her final examination. Often, however, one seeks a more precise measurement, in which case it is relevant to look at, for example, the grades achieved by pupils in various examination subjects. In addition, there are various choices to be made with regard to the scope of effectiveness measures. Should only performance in basic skills be studied? Is the concern also perhaps

with higher cognitive processes? And should not social and/or affective returns on education be assessed as well? Other problems related to the economic analysis of schools include the difficulty in determining the monetary value of inputs and processes, and the prevailing lack of clarity on how the production process operates (precisely which procedural and technical measures are necessary to achieve maximum output).

Relevant to the question of the usefulness of defining effectiveness in economic terms, is the question of whether it is acceptable to consider the school as a production unit.

Theoretical views on organizational effectiveness

Organizational theorists often adhere to the thesis that the effectiveness of organizations cannot be described in a straightforward manner. Instead, a pluralistic attitude is taken with respect to the interpretation of the concept in question. By that it is assumed that the interpretation chosen depends on the organizational theory and the specific interests of the group posing the question of effectiveness (Cameron and Whetten, 1983, 1985; Faerman and Quinn, 1985). Therefore the main organizational models used as background for a wide range of definitions of effectiveness will be briefly reviewed.

Economic rationality

The above-mentioned economic definition of effectiveness is derived from the idea that organizations function rationally – that is to say, with certain goals. Goals that can be operationalized as outputs to be pursued are the basis for choosing effect criteria (effect criteria being the variables used to measure effects, i.e. student achievement, well-being of the pupils etc.). There is evidence of economic rationality whenever the goals are formulated as outputs of the primary production process of the school. In the functioning of a school as a whole, other, different, goals can also play a part, such as having a clear-cut policy to increase the number of enrolments. Even with regard to this type of objective, a school can operate rationally, although it falls outside the specific interpretation given to economic rationality. Effectiveness

as defined in terms of economic rationality can also be identified as the productivity of an organization. Tyler (1950) has provided the best-known example of the rational or goal-oriented model, used for both curriculum development and educational evaluation. If one takes into consideration the other organizational models, to be discussed shortly, the economic rationality model may be dismissed as both simplistic and out of reach. It is well known in the teaching field how difficult it is to reach a consensus on goals and to operationalize and quantify these. From the standpoint that other values besides productivity are just as important for organizations to function, the rational model is regarded as simplistic.

The organic system model

According to the organic system model, organizations can be compared to biological systems which adapt to their environment. The main characteristic of this approach is that organizations are considered to interact openly with their surroundings. Thus, they need not be passive objects of environmental manipulation but can themselves actively exert influence on the environment. It is worth mentioning that this viewpoint is mainly concerned with the organization's 'survival' in what is a sometimes hostile environment. It implies that organizations must be flexible, namely to secure essential resources and other inputs. Thus, according to this model, flexibility and adaptability are the most important conditions for effectiveness, i.e. for survival. School effectiveness may then be measured in terms of yearly intake, which could, in part, be attributed to intensive canvassing or school-marketing.

No matter how strange this view on effectiveness may seem at first glance, it is nevertheless supported by an entirely different scientific sphere: microeconomics of the public sector. Niskanen (1971) demonstrated that public-sector organizations are primarily targeted at maximizing budgets and that there are insufficient external incentives for these organizations – schools included – to encourage effectiveness and efficiency. In this context it is interesting to examine whether canvassing activities of schools mainly consist of the displaying of acquired facilities (inputs) or of the presentation of output data such as the previous years' examination results.

Finally, it should also be mentioned that although the organic system model is inclined towards inputs, this does not necessarily exclude a concern for satisfying outputs. This may be the case in situations where the environment makes the availability of inputs dependent on the quantity and/or quality of previous achievements (output).

The human relations approach of organizations

If in the open-system perception of organizations there is an inclination towards the environment, in the so-called human relations approach the eye of the organization analyst is focused inward. This fairly classical school of organizational thought has to a certain extent remained intact, even in more recent organizational characterizations. In Mintzberg's concept of the professional bureaucracy, some aspects of the human relations approach are present, namely the emphasis on the well-being of the individuals within an organization, and the importance of consensus and collegial relationships as well as motivation and human resource development (Mintzberg, 1979). From this perspective, job satisfaction of workers and their involvement within the organization are appropriate criteria for measuring the most desired characteristics of the organization. The organizational theorists who share this view regard these criteria as effectiveness criteria.

The bureaucracy

The essential problem with regard to the administration and structure of organizations, in particular organizations such as schools which have many relatively autonomous sub-units, is how to create a harmonious whole. A means for this can be provided through appropriate social interaction and opportunities for personal and professional development (see the human relations approach). A second means is provided by organizing, clearly defining and formalizing these social relations. The prototype of an organization in which positions and duties are formally organized is the 'bureaucracy'. From this perspective, certainty and continuity of the existing organizational structure is the effectiveness criterion. It is well-known that bureaucratic organizations tend to produce more bureaucracy. The underlying motive behind this is to ensure the continuation or,

better still, the growth of one's own department. This continuation motive can start operating as an effect criterion in itself.

The political model of organizations

Certain organizational theorists have seen organizations as political battlefields (Pfeffer and Salancik, 1978). According to this view, departments, individual workers and management staff use official duties and goals in order to achieve their own hidden – or less hidden – agendas. Good contacts with powerful outside bodies are regarded as very important for the standing of their department or of themselves. From a political perspective the question of the effectiveness of the organization as a whole is difficult to answer. A more relevant question is the extent to which internal groups comply with the demands of certain external interested parties. In the case of schools, these bodies could be school governing bodies, parents, and/or the local business community.

It has already been mentioned that organizational concepts of effectiveness not only depend on theoretical answers to the question of how organizations are 'pieced together' but also on the position of the factions posing the effectiveness question. On this point there are differences between these five views on organizational effectiveness. With regard to the economic rationality and the organic system models, the management of the organization is the main 'actor' posing the effectiveness question. As far as the other models are concerned, department heads and individual workers are the actors that seek to achieve certain effects.

In *Table 3* below the chief characteristics of the different theoretical models of organizational effectiveness are summarized.

Table 3. Organizational-effectiveness models

Theoretical background	Effectiveness criterion	Level at which the effectiveness question is asked	Main areas of attention
(Business) economic rationality	Productivity	The organization	Output and its determinants
Organic system theory	Adaptability	The organization	Acquiring essential inputs
Human relations approach	Involvement	Individual members of the organization	Motivation
Bureaucratic theory; system members theory; social, psychological, homeostatic theories	Continuity	The organization + individuals	Formal structure
Political theory on how organizations work	Responsiveness to external stakeholders	Sub-groups and individuals	Independence, power

So when confronted with the diversity of views on effectiveness that exist within organizational theory, which standpoint should one adopt? Should one consider that there are several forms of effectiveness, should a choice be made, or is it possible to develop an all-embracing concept of effectiveness based on several views?

For a discussion of these questions the reader is referred to Scheerens (1992) and Scheerens and Bosker (1997). From the perspective of educational planning in developing countries, the most gainful position would appear to be one where productivity, in terms of quantity and quality of school output, is seen as the ultimate criterion and the other criteria are seen either as preconditions (responsiveness) or 'means' (criteria referring to organizational conditions such at teacher satisfaction). In the applied use of the school-effectiveness knowledge base (to be discussed in subsequent chapters), such as the design and use of monitoring and evaluation systems, the broader organizational

view of effectiveness can serve as the conceptual background for the development of education indicators.

Modes of schooling, as avenues for improving effectiveness

In the previous section it was established that the overall concept of school effectiveness may be defined differently depending on the normative criteria related to the various schools of thought in organizational science. This led to a discussion about the choice of criteria or types of 'effects' to be measured. Bearing in mind that school effectiveness is a causal concept, the dimension of *causes* or *means* should be taken into consideration as well as the type of effects.

This involves the identification of all the malleable features of school functioning that might contribute to attaining the effects aimed for. Such a broad perspective is needed in order to obtain as complete a picture as possible of the elements and aspects of schooling and school functioning that could potentially be used to improve effectiveness.

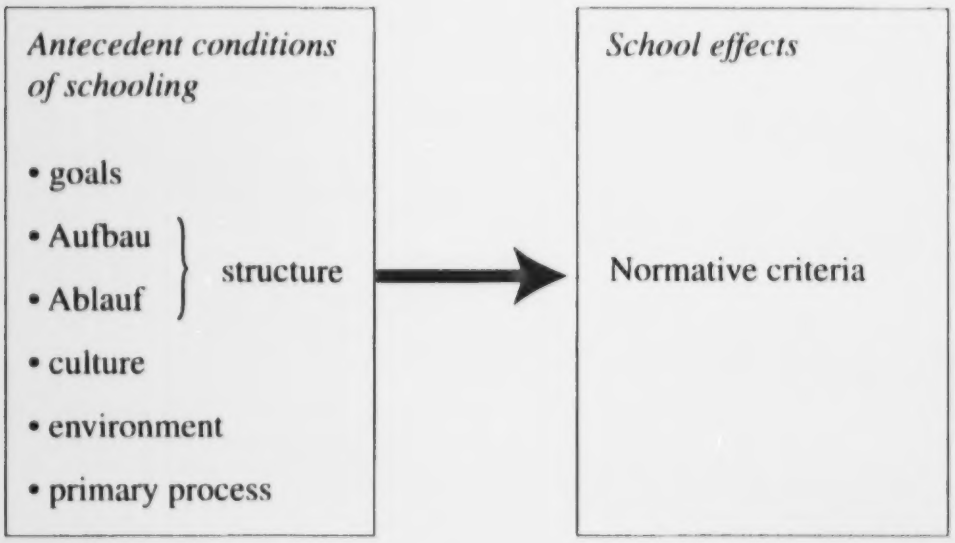
Based on well-known distinctions in organizational science (e.g. Mintzberg, 1979; De Leeuw, 1982), the following categories can be used as a framework to further distinguish elements and aspects of school functioning:

- goals;
- the structure of positions or sub-units ('Aufbau');
- the structure of procedures ('Ablauf');
- culture;
- the organization's environment;
- the organization's primary process.

These antecedent conditions will be referred to as *modes of schooling*. Modes are considered as conditions that, in principle, may be manipulated by the school itself or by outside agencies that have control over the school. The overall effectiveness equation, consisting

of antecedent conditions on the one hand and effects on the other, can be depicted as in *Figure 1*.

Figure 1. Schematic representation of school effectiveness



Among these modes, goals have a specific role. In organizational-effectiveness thinking, goals can be seen as the major defining characteristic of the effectiveness concept itself. In the previous section it was established that different goals, or effectiveness criteria, can be used to assess effectiveness.

When goals are not taken as given in effectiveness assessment, but rather as options or directions that the organization can choose, this further emphasizes the relativity of the organizational-effectiveness concept. The question of whether an organization chooses the 'right' goals or objectives can be seen as a fundamental question that takes precedence over the question of instrumental rationality, concerning the attainment of 'given' objectives. In this respect the well-known distinction between 'doing the right things' and 'doing things right' is at stake. In turn, the question of the 'rightness' of a particular choice of organizational goals can be seen as instrumental to meeting the demands of stakeholders in the external environment of the organization.

In the case of schools, for instance, these may be demands from the local community or from parents' associations.

Further options with respect to goals are:

- prioritization when further specifying the overall goals (in the case of schools, for instance, the relative priority of cognitive versus non-cognitive objectives and the relative emphasis on basics versus 'other' subjects);
- the levels or standards of goal attainment that are striven for: if schools are relatively autonomous they may set absolute standards, to be met by every pupil, or they may adapt achievement standards to the initial level of pupils;
- whether or not attainment levels are adapted to accommodate different ability levels among pupils.

Finally, one of the tasks of the organization may be considered to be ensuring that goals or attainment targets are shared among the members of the organization. This is particularly relevant for organizations such as schools, in which teachers traditionally have a lot of autonomy. In control theory the phenomenon of unifying the goals of organizational sub-units (i.e. departments and individual teachers, in the case of schools) is known as 'goal co-ordination'.

It is beyond the scope of this monograph to discuss the various modes of schooling in detail. *Table 4* provides a schematic overview of the most important sub-categories. A more detailed presentation can be found in Scheerens and Bosker (1997, Chapter 1).

'Pupil selection' is a condition that would generally fall outside the definition of school effectiveness, since the specific interest in the value added by schooling, over and above the impact of the innate abilities of pupils, precludes the consideration of this option. Yet, depending on the regulations determined by higher administrative units, it is definitely a condition that schools may manipulate. Selectivity, as a way of regulating education, can be seen as the most important competitor to the philosophy that schooling makes a difference through dedication of staff and the choice of superior technology.

Table 4. Modes of schooling

Goals
- goals in terms of various effectiveness criteria
- priorities in goal specifications (cognitive – non-cognitive)
- aspirations in terms of attainment level and distribution of attainment
- goal co-ordination

Aufbau (position structure)
- management structure
- support structure
- division of tasks and positions
- grouping of teachers and students

Ablauf (structure of procedures)

• general management • production management • marketing management • personnel management (among which hrm, hrd) • financial and administrative management • co-operation	planning co-ordinating controlling assessing

Culture
- indirect measures
- direct measures

Environment
- routine exchange (influx of resources, delivery of products)
- buffering
- active manipulation

Primary process
- curricular choices
- curriculum alignment
- curriculum in terms of prestructuring instructional process
- pupil selection
- levels of individualization and differentiation
- instructional arrangements in terms of teaching strategies and classroom organization

The sub-set of modes of schooling that have been the focus of empirical school-effectiveness research will be treated more fully in the next chapter, in which the results of various strands of educational-effectiveness research are summarized. In the meantime, it can be said that empirical school-effectiveness research has concentrated on production management, co-operation, aspects of culture and all sub-categories of the primary process. A more complete set of modes, derived from organization theory, is considered useful to give as full a picture as possible of conditions that may be used as avenues for school improvement.

Summary and conclusions

This chapter, which delineates the conceptual map of school effectiveness, started out discussing economic definitions of effectiveness. The bulk of current empirical school-effectiveness research, however, has been concentrated on studying the relationship between non-monetary inputs and short-term outputs, i.e., in Cheng's (1993) terminology, technical effectiveness.

Theoretical approaches to organizational effectiveness have revealed a range of models, each emphasizing a different type of criteria for judging effectiveness, with the major categories being productivity, adaptability, involvement, continuity, and responsiveness to external stakeholders. Comparison of this range of effectiveness criteria with the implicit model used in most empirical school-effectiveness studies, shows that the productivity criterion is the predominant criterion in actual research practice. This position can be legitimized from the point of view of a means-to-end ordering of the criteria, with productivity taken as the ultimate criterion (Scheerens, 1992). Such a position has been contested, however, by other authors who see the criteria as 'competing values' (Faerman and Quinn, 1985), or who opt for a more dynamic interpretation in which the predominance of any single criterion would depend on the organization's stage of development (Cheng, 1993).

If effectiveness is recognized as being essentially a causal concept, in which means-to-end relationships are similar to cause-effect

relationships, then one may consider that there are three major components in the study of organizational effectiveness:

- the range of effects;
- the avenues of action used to attain particular effects (indicated as modes of schooling);
- functions and underlying mechanisms that explain why certain actions lead to effect-attainment.

In this chapter modes of schooling were described using the following main categories of organizational anatomy as a basic framework:

- goals;
- organizational structure, both with respect to the structure of positions, and the structure of procedures (including management functions);
- culture;
- environment;
- primary process/technology.

Each of these main categories was treated as an area that, in principle, could be manipulated or influenced by the school or an external change agent. Upon comparison of the list of modes with the current practice of empirical school-effectiveness research, it appeared that it was procedural structure (in particular school management), as well as culture and instructional conditions, that had received most attention.

Van Kesteren (1996, p. 94) included most of the perspectives that have been discussed in this chapter in his definition of organizational effectiveness:

"Organizational effectiveness is the degree to which an organization, on the basis of competent management, while avoiding unnecessary exertion, in the more or less complex environment in which it operates, manages to control internal organizational and environmental conditions, in order to provide, by means of its own characteristic transformation process, the outputs expected by

external constituencies" (translated from Van Kesteren, 1996, p. 94).

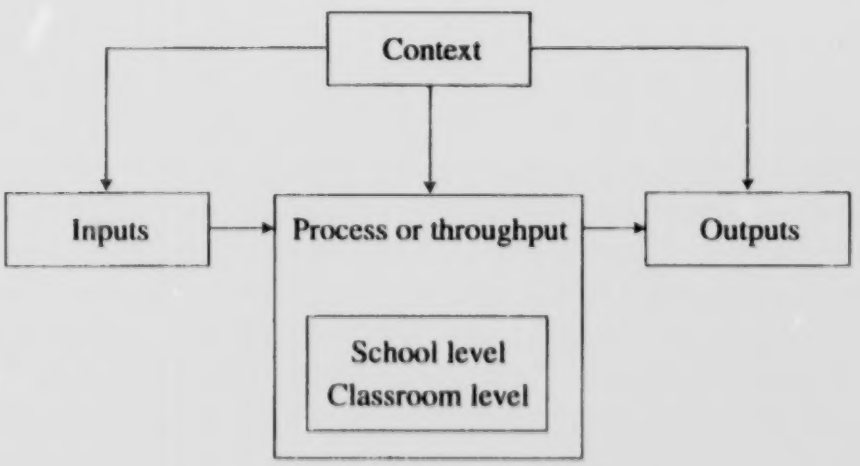
It is clear from this definition, as from the overall discussion in this chapter, that school effectiveness is primarily seen as an issue for individual schools (the school management perspective). At the same time, research does take into consideration *schooling* and other factors that are, when generalized over individual schools, associated with relatively high 'value-added' performance. Depending on the patterns of centralization and decentralization in a country (which may be different for different domains of educational functioning, such as curriculum or financing), above-school administrative levels or other constituencies have power of decision over some of the effectiveness-enhancing conditions. From the perspective of educational planning at the national level, it is important to take this issue of functional (de)centralization into consideration. For example, it should be decided, depending on overall policy and structural and cultural conditions, whether or not key effectiveness-enhancing modes of schooling should be left completely 'free' to the individual schools, or whether central stimulation measures are preferable.

II. Research: A review of the evidence from developed and developing countries

Introduction: The overall design of educational-effectiveness studies

The fundamental design of school-effectiveness research is the association of hypothetical effectiveness-enhancing conditions and measures of output, usually calculated in terms of student achievement. A basic model can be taken from systems theory, where the school is seen as a black box, within which processes or 'throughput' take place to transform this basic design. The inclusion of an environmental or contextual dimension completes this model (see *Figure 2*). The major task of school-effectiveness research is to reveal the impact of relevant input characteristics on output and to 'break open' the black box in order to show which process or throughput factors 'work', as well as the impact of contextual conditions. Within the school it is helpful to distinguish between school and classroom levels, and the corresponding school organizational and instructional processes.

Figure 2. A basic systems model of school functioning



Research tradition in educational effectiveness varies according to the emphasis placed on the various antecedent conditions of educational outputs. The different traditions also have a disciplinary basis. The common denominator of the five areas of effectiveness research is the fundamental design, which associates outputs or outcomes of schooling with antecedent conditions (inputs, processes or contextual). The following research areas or research traditions will be looked at in summarizing the research results obtained in developed countries:

- research on equality of opportunities in education and the significance of the school in this context;
- economic studies on education production functions;
- evaluation of compensatory programmes;
- studies of unusually effective schools;
- studies on the effectiveness of teachers, classes and instructional procedures.

In developing countries there is a strong predominance of studies of the education production function type. Relatively few of these have been expanded to include school organizational and instructional variables.

PART 1. EVIDENCE FROM INDUSTRIALIZED COUNTRIES

Results obtained in various strands of educational-effectiveness research

School effectiveness in equal educational opportunity research

Coleman's research into educational opportunity, on which a final report known as the Coleman report was published in 1966, forms the cornerstone for school-effectiveness studies (Coleman et al., 1966). While this study was intended to show the extent to which school achievement is related to students' ethnic and social background, the possible influence of the 'school' factor on learning achievement was also examined.

In the survey, three clusters of school characteristics were measured: (a) teacher characteristics; (b) material facilities and curriculum; and (c) characteristics of the groups or classes in which the pupils were placed. After the influence of ethnic origin and socio-economic status of the pupils had been statistically eliminated, it appeared that these three clusters of school characteristics together accounted for 10 per cent of the variance in pupil performance. Moreover, the greater part of this 10 per cent variance was due to the third cluster that was operationalized as the average background characteristics of pupils, which means that again the socio-economic and ethnic origin – now defined at the level of the school – played a central role. In reaction to the Coleman report there was general criticism concerning the limited interpretation of the school characteristics. In most cases, only the material characteristics were referred to, such as the number of books in the school library, the age of the building, the training of the teachers, their salaries and expenditure per pupil. Nevertheless, other characteristics were included in Coleman's survey, such as the attitude of school heads and teachers towards pupils and the attitude of teachers towards integrated education, i.e. multiracial and classless (in the social sense) teaching.

Other large-scale studies also focused primarily on providing data on equality of opportunity, such as the one by Hauser, Sewell and Alwin (1976). The latter also indicated a relatively high correlation between socio-economic and ethnic family characteristics on the one hand, and learning attainment on the other, compared to a small or even negligible influence from school and instruction characteristics. The outcomes were criticized by educationists for the rather narrow choice of school characteristics, as well as on methodological grounds (cf. Aitkin and Longford, 1986), i.e. for multi-level associations not being properly modelled and analyzed.

Economic studies on educational production functions

The focus of economic approaches to school effectiveness is the question of which malleable inputs can increase outputs. If there was reliable knowledge available on the extent to which a selection of inputs is related to a selection of outputs, it would be possible to

define a function that would characterize the production process in schools – i.e. a function that could accurately indicate how a change in the inputs would affect the outputs.

This research tradition can be identified by the phrase 'input-output studies' or by the phrase 'research into education production functions'. The research model for economics-related production studies hardly differs from that for other types of effectiveness research: the relationship between malleable school characteristics and achievement is studied whereas the influence of background conditions like social class and pupils' intelligence is eliminated as far as possible. The specific nature of production-function research is the concentration on what can be interpreted in a more literal sense as input characteristics: the teacher/pupil relationship, teacher training, teacher experience, teachers' salaries and expenditure per pupil. More recent observations within this type of research have tended to suggest that effectiveness predictors known from educational psychology research be taken into account (Hanushek, 1986). It should be noted that the Coleman report (Coleman et al., 1966) is often included in the category of input-output studies. In view of its emphasis on the more material school characteristics, the association is an obvious one.

The findings of this type of research have often been considered disappointing. Review studies, such as the one by Hanushek (1986), produce the same conclusions: inconsistent findings throughout the entire available research and scant effect at most of the relevant input variables.

In their re-analysis of Hanushek's (1986) data set, Hedges et al. (1994) concluded, that there was nevertheless an effect of per-pupil expenditure of "considerable practical importance" (an increase of PPE by $510 would be associated with a 0.7 s.d. increase in student outcome).

This conclusion, however, was in turn contested by Hanushek.

Table 5, cited from Hanushek, 1997, presents the most recent 'vote count' overview of education production function studies.

Table 5. Percentage distribution of estimated effect of key resources on student performance, based on 377 studies (cited from Hanushek, 1997, p. 144)

Resources	Number of estimates	Statistically significant		Statistically insignificant		
		Positive	Negative	Positive	Negative	Unknown sign
Real classroom resources						
• Teacher/pupil ratio	277	15%	13%	27%	25%	20%
• Teacher education	171	9	5	33	27	26
• Teacher experience	207	29	5	30	24	12
Financial aggregates						
• Teacher salary	119	20%	7%	25%	20%	28%
• Expenditure per pupil	163	27	7	34	19	13

Hanushek's interpretation of these results is that one can have little confidence that adding more of any of the specific resources or, for that matter, of the financial aggregates, will lead to a boost in student achievement. The variable that shows the highest proportion of positive effects is teacher experience but, here, 'reverse causation' could be at play, since more experienced teachers might have selected schools with better-performing pupils (ibid., p. 144).

In other reviews, e.g. Verstegen and King (1998), a more positive interpretation is given of largely the same set of studies as that analyzed by Hanushek (1997). During the past decade, several studies drew attention to the fact that certain resource input factors did show significant positive associations with pupil achievement or other educational outcomes, the most important of these being the following: Card and Krueger (1992), which indicated a positive association between school resources and differences in earnings among workers; Hedges, Laine and Greenwald (1994) who conducted a statistical meta-analysis on a sub-set of Hanushek's 1979 data set and found significant effects for several resource input variables, amongst which a rather large positive effect of per-pupil expenditure; Ferguson (1991), who found particularly large effects of variables related to teacher

qualifications (specifically scores on a teacher recertification test); and Achilles (1996) who reported the sustained effects of reduced class size (14-16 as compared to 22-24) in kindergarten and the first three grades of primary school) on student achievement.

That these differences in interpretation are to a certain degree of the kind: 'the cup is half full' as compared to 'the cup is half empty', is illustrated by Verstegen and King's (1998) presentation of *Table 6*, cited from Hanushek, 1997.

Table 6. Verstegen and King's (1998) rendering of Hanushek's (1997, p. 144) tabulation

Percentage distribution of significant estimated effects of key resources on student achievement, based on 377 studies

		Statistically significant	
	Number of estimates (no.)	Positive (%)	Negative (%)
Real classroom resources			
• Teacher/pupil ratio	78	54	46
• Teacher education	24	64	36
• Teacher experience	70	85	15
Financial aggregates			
• Teacher salary	32	74	26
• Expenditure per pupil	55	79	21

By omitting the large proportions of studies showing insignificant results, and 'blowing up' the relatively small numbers of studies showing significant results to percentages, these authors appear keen to see (or construct) the bright side of things.

Unfortunately, as in other types of educational-effectiveness studies, the critics and those with a more conservative interpretation appear to have the best arguments. Hanushek, 1997, has listed most of them.

- When outcome measures, such as student achievement scores, are properly adjusted for student background characteristics, and 'value added' outcome indicators are used, the number of positive effects declines.

- If data at high aggregation levels (e.g. individual states) are used, misspecification bias is likely to produce overstatement of effects (this criticism would apply to both the Ferguson and the Card and Krueger studies). This problem frequently occurs for the per-pupil expenditure variable which is usually only defined at the district level.

- In statistical meta-analysis the null hypothesis is that resources or expenditure differences never, under whatever circumstances, affect student performance; clearly this hypothesis is to be rejected even in cases where only a minority of studies show a significant positive association with the outcome variable.

Many of the recent reviews of the research evidence on education production function studies mention the need to search for answers to the question of 'why money does or does not matter', for example by looking for combinations and interactions between resource input levels and school organizational and instructional variables. In a recent collection of articles on class size (Galton, 1999), reference is made to differences between educational cultures in the degree to which large classes are considered a burden to teachers.

Another desirable extension of the basic education production function type of study would be to address questions of cost-effectiveness more directly, comparing cost-effectiveness or even cost-benefit ratios for different policy measures. A comparison of education production function studies between industrialized and developing countries would be particularly interesting, since a 'restriction of range' phenomenon (little variance in, for example, teacher salaries between schools) might suppress the effects in relatively homogeneous school systems. Results of education production function studies in developing countries will be presented in a subsequent section.

The evaluation of compensatory programmes

Compensatory programmes may be seen as the active branch in the field of equal educational opportunity. In the USA, compensatory programmes such as Head Start were part of President Johnson's 'war on poverty'. Other large-scale American programmes were Follow-Through – the sequel to Head Start – and special national development programmes that resulted from Title 1 of the Elementary and Secondary Education Act, enacted in 1965. Compensatory programmes were intended to improve the levels of performance of the educationally disadvantaged. In the late sixties and early seventies there were also similar programmes in the Netherlands, including the Amsterdam Innovation project, the Playgroup Experiment project, Rotterdam's Education and Social Environment (OSM) project and the Differentiated Education project (GEON) of the city of Utrecht.

Compensatory programmes manipulate school conditions in order to raise achievement levels of disadvantaged groups of pupils. The degree of success of these programmes was shown to depend on basically the same set of factors as those identified in other strands of educational-effectiveness research.

However, redressing the balance with effective compensatory programmes has proved to be more difficult than was expected. In fact, no overwhelming successes could be established. There was heated debate over the way available evaluation studies should be interpreted.

The key question is: what results can realistically be expected from compensatory education, given the dominant influence in the long run of family background and cognitive aptitudes on pupils' attainment level? Scheerens (1987, p. 95) concluded that the general impression provided by the evaluation of compensatory programmes is that relatively small progress in performance and cognitive development can be discerned immediately after a programme finishes. By and large, long-term effects of compensatory programmes cannot be established. Moreover, it was occasionally demonstrated that it was the 'moderately' disadvantaged that benefited most from the

programmes, whereas the most educationally disadvantaged pupils made the least progress, relatively speaking.

In view of the variety of compensatory programmes, the evaluation studies gave some insight into which type of educational provision was best, in relative terms. When comparing the various components of Follow Through, programmes that were aimed at developing elementary skills like language and mathematics, and used highly structured methods, turned out to be winners (Stebbins et al., 1977; Bereiter and Kurland, 1982; Haywood, 1982). The recent evaluation of a structured programme on elementary reading in the USA, Success for All, corroborated these conclusions (Slavin, 1996). In any case, when interpreting the results of evaluations of compensatory programmes one should bear in mind that the findings were established for a specific pupil population: very young children (infants or first years of junior school) from predominantly working-class families.

Effective-schools research

Research known under labels such as 'identifying unusually effective schools' or the 'effective schools movement' can be regarded as that which comes closest to the core of school-effectiveness research. In Coleman's and Jencks' surveys, inequality of educational opportunity was the central problem. In economics-related input-output studies, the school was even conceived as a 'black box'. In the yet to be-discussed research on the effectiveness of classes, teachers and instruction methods, education characteristics on a lower aggregation level than the school are the primary research object.

Effective-schools research is generally regarded as a response to the results of studies like Coleman's and Jencks', from which it was concluded that schools did not matter very much in terms of differences in levels of achievement. From titles such as 'Schools can make a difference' (Brookover et al., 1979) and 'School matters' (Mortimore et al., 1988), it appears that refuting this message was an important source of inspiration for this type of research. The most distinguishing feature of effective-schools research is the fact that it has attempted to break open the 'black box' of the school by studying characteristics related to organization, form and content of schools.

The results of the early effective-schools research converged more or less around five factors:

- strong educational leadership;
- emphasis on the acquiring of basic skills;
- an orderly and secure environment;
- high expectations of pupil attainment;
- frequent assessment of pupil progress.

In the literature this is sometimes identified as the 'five-factor model of school effectiveness'. It should be mentioned that effective-schools research has been largely carried out for primary schools, while at the same time studies have been conducted mostly in inner cities and in predominantly working-class neighbourhoods.

In more recent contributions, effective-schools research has been integrated with education production function and instructional-effectiveness research, this meaning that a mixture of antecedent conditions has been included. Studies have evolved from comparative case studies to surveys, and conceptual and analytical multi-level modelling has been used to analyze and interpret the results. Numerous reviews on school effectiveness have been published since the late seventies. Examples are Purkey and Smith (1983) and Ralph and Fennessey (1983). More recent reviews are those by Levine and Lezotte (1990), Scheerens (1992), Creemers (1994), Reynolds et al. (1993), Sammons et al. (1995), and Cotton (1995).

The focal point of the reviews is the question of 'what works'; typically the reviews give lists of effectiveness-enhancing conditions.

There is fairly wide consensus in the reviews on the main categories of variables to be distinguished as effectiveness-enhancing conditions, even when one compares earlier with more recent reviews.

Table 7 summarizes the characteristics listed in the reviews by Purkey and Smith (1983), Scheerens (1992), Levine and Lezotte (1990), Sammons et al. (1995), and Cotton (1995).

Table 7. Effectiveness-enhancing conditions of schooling in five review studies (italics in the column of the Cotton study refer to sub-categories)

Purkey and Smith, 1983	Levine and Lezotte, 1990	Scheerens, 1992	Cotton, 1995	Sammons, Hillman and Mortimore, 1995
Achievement-oriented policy	Productive climate and culture	Pressure to achieve	Planning and learning goals	Shared vision and goals
Co-operative atmosphere, orderly climate		Consensus, co-operative planning, orderly atmosphere	Curriculum planning and development	A learning environment, positive reinforcement
Clear goals on basic skills	Focus on central learning skills		Planning and learning goals *school-wide emphasis on learning*	Concentration on teaching and learning
Frequent evaluation	Appropriate monitoring	Evaluative potential of the school, monitoring of pupils' progress	Assessment (district, school, classroom level)	Monitoring progress
In-service training/ staff development	Practice-oriented staff development		*Professional development* collegial learning	A learning organization
Strong leadership	Outstanding leadership	Educational leadership	School management and organization, leadership and school improvement, leadership and planning	Professional leadership
	Salient parent involvement	Parent support	Parent community involvement	Home-school partnership
Time on task, reinforcement, streaming	Effective instructional arrangements	Structured teaching, effective learning time, opportunity to learn	Classroom management and organization, instruction	Purposeful teaching

High expectations	High expectations	Teacher student interactions	High expectations
			Pupil rights and responsibilities
		District-school interactions	
		Equity	
		Special programmes	
	External stimuli to make schools effective		
	Physical and material school characteristics		
	Teacher experience		
	School context characteristics		

Consensus is greatest with respect to the following factors:

- achievement orientation (which is closely related to 'high expectations');
- co-operation;
- educational leadership;
- frequent monitoring;
- time, opportunity to learn and 'structure' as the main instructional conditions.

This consensus on general characteristics hides considerable divergence in the actual operationalization of each of the conditions. Evidently concepts like 'productive, achievement-oriented climate' and 'educational leadership' are complex, and individual studies may vary in their focus.

Scheerens and Bosker (1997, Chapter 4) provide an analysis of the factors that are considered to work in schooling, as apparent from the actual questionnaires and scales used in 10 empirical school-effectiveness studies.

Their summary table, in which the main components of 13 general factors are mentioned, is cited below as *Table 8*.

Table 8. Components of 14 effectiveness-enhancing factors

Factors	Components
Achievement, orientation, high expectations	• clear focus on the mastering of basic subjects • high expectations (school level) • high expectations (teacher level) • records on pupils' achievement
Educational leadership	• general leadership skills • school leader as information provider • orchestrator or participative decision-making • school leader as co-ordinator • meta-controller of classroom processes • time spent on educational and administrative leadership • counsellor and quality controller of classroom teachers • initiator and facilitator of staff professionalization
Consensus and cohesion among staff	• types and frequency of meetings and consultations • contents of cooperation • satisfaction about co-operation • importance attributed to co-operation • indicators of successful co-operation
Curriculum quality/ opportunity to learn	• setting curricular priorities • choice of methods and textbooks • application of methods and textbooks • opportunity to learn • satisfaction with the curriculum
School climate	(a) *Orderly atmosphere* • the importance given to an orderly climate • rules and regulations • punishment and reward • absenteeism and drop-out • good conduct and behaviour of pupils • satisfaction with orderly school climate
	(b) *Climate in terms of effectiveness orientation and good internal relationships* • priorities in an effectiveness-enhancing school climate • perceptions on effectiveness-enhancing conditions • relationships between pupils • relationships between teacher and pupils • relationships between staff • relationships: the role of the head teacher • pupils' engagement • appraisal of roles and tasks • job appraisal in terms of facilities, conditions of labour, task load and general satisfaction • facilities and building

Evaluative potential	• evaluation emphasis • monitoring pupils' progress • use of pupil monitoring systems • school process evaluation • use of evaluation results • keeping records on pupils' performance • satisfaction with evaluation activities
Parental involvement	• emphasis on parental involvement in school policy • contact with parents • satisfaction with parental involvement
Classroom climate	• relationships within the classroom • order • work attitude • satisfaction
Effective learning time	• importance of effective learning • time • monitoring of absenteeism • time at school • time at classroom level • classroom management • homework

Studies on instructional effectiveness

The most relevant strands of research concerning teaching and classroom processes for the topic at hand are studies on characteristics of effective teachers, and studies that go under the label of 'process-product studies'. This latter category of studies was also inspired by Carroll's (1963) model of teaching and learning and off-shoots of this model, such as the models of 'mastery learning' (Bloom, 1976) and 'direct teaching' (e.g. Doyle, 1985).

The research results have been reviewed by, amongst others, Stallings (1985), Brophy and Good (1986), and Creemers (1994), and quantitatively synthesized in meta-analyses by Walberg (1984), Fraser et al. (1987) and Wang, Haertel and Walberg (1993). These latter authors have also included in their analyses variables from outside the classroom situation, such as the student's relationships with peers, and the home environment (e.g. television viewing), which they put under the heading of 'educational productivity'.

In the sixties and seventies the effectiveness of certain personal characteristics of teachers was given particular attention. Medley and Mitzel, 1963; Rosenshine and Furst, 1973 and Gage, 1965 are among those who reviewed the research findings. From these it emerged that there was hardly any consistency found between personal characteristics of the teacher such as warm-heartedness or inflexibility on the one hand, and pupil achievement on the other. When studying teaching styles (Davies, 1972), the behavioural repertoire of teachers was generally looked at more than the deeply-rooted aspects of their personality. Within the framework of 'research on teaching', there followed a period during which much attention was paid to observing teacher behaviour during lessons. The results of these observations, however, seldom revealed a link with pupil performance (see, for example, Lortie, 1973). In a subsequent phase, more explicit attention was given to the relationship between observed teacher behaviour and pupil achievement. This research has been identified in the literature as 'process-product studies'. Variables which emerged 'strongly' in the various studies were the following (Weeda, 1986, p. 68):

- *clarity:* clear presentation adapted to suit the cognitive level of pupils;
- *flexibility:* varying teaching behaviour and teaching aids, organizing different activities etc.;
- *enthusiasm:* expressed in verbal and non-verbal behaviour of the teacher;
- *task related and/or businesslike behaviour:* directing the pupils to complete tasks, duties, exercises etc. in a businesslike manner;
- *criticism:* much negative criticism has a negative effect on pupil achievement;
- *indirect activity:* taking up ideas, accepting pupils' feelings and stimulating individual activity;
- *providing the pupils with an opportunity to learn criterion material* – that is to say, a clear correspondence between what is taught in class and what is tested in examinations and assessments;
- making use of *stimulating* comments: directing the thinking of pupils to the question, summarizing a discussion, indicating the beginning or end of a lesson, emphasizing certain features of the course material;

- *varying the level* of both cognitive questions and cognitive interaction.

In later studies effective teaching time became a central factor. The theoretical starting points of this can be traced back to Carroll's teaching-learning model (Carroll, 1963). Chief aspects of this model are:

- actual net learning time which is seen as a result of perseverance and opportunity to learn;
- necessary net learning time as a result of pupil aptitude, quality of education and pupil ability to understand instruction.

The mastery learning model formulated by Bloom in 1976 was largely inspired by Carroll's model, and the same goes for the concept of 'direct teaching'.

Doyle (1985) looked at the effectiveness of direct teaching, which he defined as follows:

- teaching goals are clearly formulated;
- the course material to be followed is carefully split into learning tasks and placed in sequence;
- the teacher explains clearly what the pupils must learn;
- the teacher regularly asks questions to gauge what progress pupils are making and whether they have understood;
- pupils have ample time to practise what has been taught, with much use being made of 'prompts' and feedback;
- skills are taught until mastery of them is automatic;
- the teacher regularly tests the pupils and calls on them to be accountable for their work.

The question of whether this type of highly structured teaching works equally well for acquiring complicated cognitive processes in secondary education as for mastering basic skills at the primary-school level has been answered in the affirmative (according to Brophy and Good, 1986). Yet, in such settings, progress through the subject matter can be taken with larger steps, testing need not be so frequent and there should be space left for applying problem-solving strategies flexibly. Doyle (ibid.) emphasized the importance of varying the

learning tasks and of creating intellectually challenging learning situations. These can be produced through an evaluative climate in the classroom, where risk-taking is encouraged, even with complicated tasks.

In the domain of classroom organization, Bangert, Kulik and Kulik's meta-analysis (1983) revealed that individualized teaching in secondary education hardly led to higher achievement and had no influence whatsoever on factors such as self-esteem and attitudes of pupils. 'Best-evidence-syntheses' by Slavin (1996) indicated a significantly positive effect of co-operative learning at the primary-school level.

Meta-analyses by Walberg (1984) and Fraser et al. (1987) found the most significant effects for the following teaching conditions:

- reinforcement;
- special programmes for gifted children;
- structured learning of reading;
- cues and feedback;
- mastery learning of physics;
- working together in small groups.

It should be noted that recently developed cognitive and, in particular, constructivist perspectives on learning and instruction, challenge the behaviouristically-oriented approach and results of the process-product research tradition (Duffy and Jonassen, 1992; Brophy, 1996). According to the constructivist approach, independent learning, meta-cognition (e.g. learning to learn), 'active learning', learning to model the behaviour of experts ('cognitive apprenticeship') and learning from real-life situations ('situated cognition') should be emphasized, although the effectiveness of teaching and learning according to these principles has not yet been firmly established. Authors who have addressed this issue (Scheerens, 1994; De Jong and Van Joolingen, 1998), however, point out that a straightforward comparison with more structured teaching approaches may be complicated, since constructivist teaching emphasizes different, higher order, cognitive objectives. Moreover, structured versus 'active' and 'open' teaching is probably better conceived as a continuum of different mixes of structured and 'open' aspects, rather than as a dichotomy.

Integration

Of the five effectiveness-oriented educational research types that were reviewed, two focused on 'material' school characteristics (such as teacher salaries, building facilities and teacher/pupil ratio). The results were rather disappointing in that no substantial positive correlations of these material investments and educational achievement could be established in a consistent way across individual studies. On the basis of more recent studies these rather pessimistic conclusions have been challenged, although methodological criticism indicates that the earlier pessimistic conclusions are more realistic. In-depth process studies connected with large-scale evaluations of compensatory programmes have pointed out that programmes using direct, i.e. structured, teaching approaches were superior to more 'open' approaches. The research movement known as research on exemplary effective schools (or effective-schools research) focused more on the internal functioning of schools than the earlier tradition of input-output studies.

These studies produced evidence that factors such as strong educational leadership, emphasis on basic skills, an orderly and secure climate, high expectations of pupil achievement and frequent assessment of pupil progress were indicative of unusually effective schools.

Research results in the field of instructional effectiveness are centred around three major factors: effective learning time, structured teaching and opportunity to learn in the sense of a close alignment between items taught and items tested.

Although all kinds of nuances and specificities should be taken into account when interpreting these general results, they appear to be fairly robust – as far as educational setting and type of students are concerned. The overall message is that an emphasis on basic subjects, an achievement-oriented orientation, an orderly school environment and structured teaching, which includes frequent assessment of progress, is effective in the attainment of learning results in the basic school subjects.

Table 9 summarizes the main characteristics of the five research traditions.

Table 9. General characteristics of five types of school-effectiveness research

	Independent variable type	Dependent variable type	Discipline	Main study type
a. (Un)equal opportunities	Socio-economic status and IQ of pupil, material school characteristics	Attainment	Sociology	Survey
b. Production functions	Material school characteristics	Achievement level	Economics	Survey
c. Evaluation of compensatory programmes	Specific curricula	Achievement level	Interdisciplinary pedagogy	Quasi-experiment
d. Effective schools	'Process' characteristics of schools	Achievement level	Interdisciplinary pedagogy	Case study
e. Effective instruction	Characteristics of teachers, instruction, class organization	Achievement level	Educational psychology	Experiment observation

In recent school-effectiveness studies these various approaches to educational effectiveness have been integrated, namely in their conceptual modelling and choice of variables. At the technical level, multi-level analysis has contributed significantly to this development. In contributions to the conceptual modelling of school effectiveness, schools have been depicted as a set of 'nested layers' (Purkey and Smith, 1983), where the central assumption is that higher organizational levels facilitate effectiveness-enhancing conditions at lower levels (Scheerens and Creemers, 1989). In this way, a synthesis between production functions, instructional effectiveness and school effectiveness has become possible. This is accomplished by including the key variables from each tradition, each at the appropriate 'layer'

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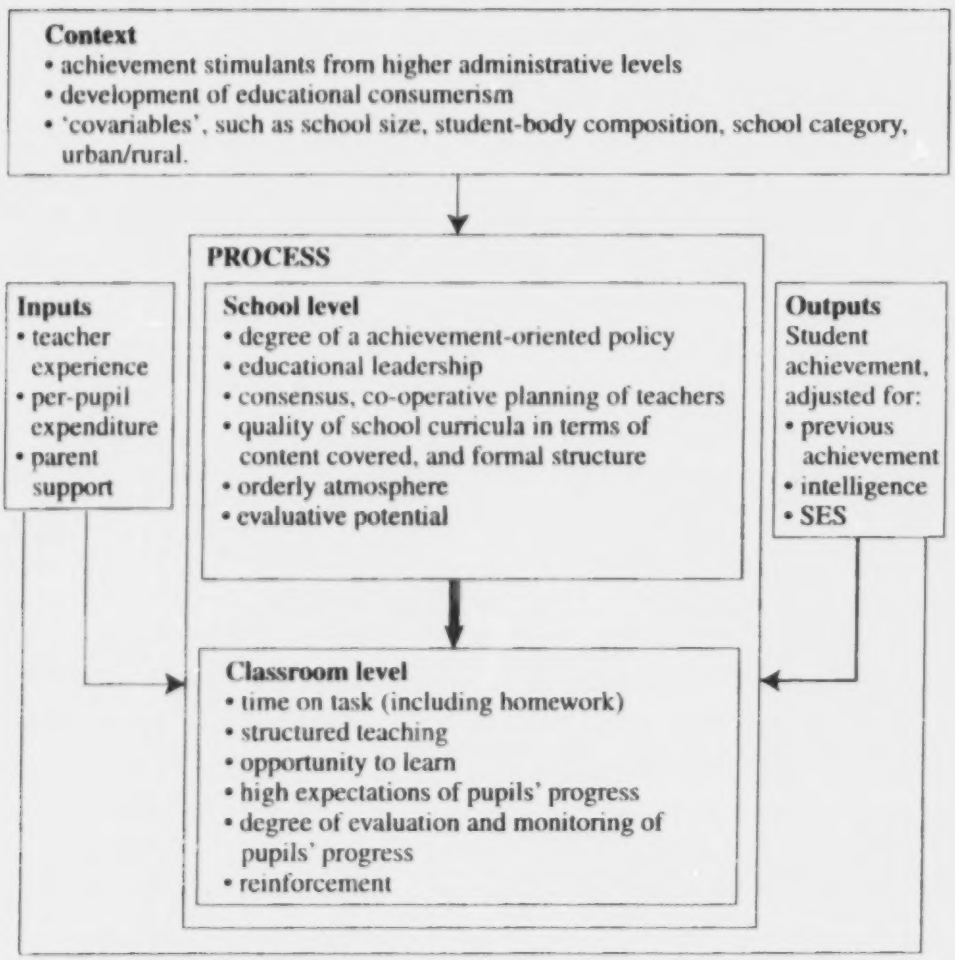
or level of school functioning [the school environment, the level of school organization and management, the classroom level and the level of the individual student]. Conceptual models developed according to this integrative perspective include those by Scheerens (1990), Creemers (1994), and Stringfield and Slavin (1992). Since the Scheerens model is used as the basis for the meta-analyses described in subsequent sections, it is shown in *Figure 3*.

Figure 3. An integrated model of school effectiveness
(from Scheerens, 1990)


Context
• achievement stimulants from higher administrative levels
• development of educational consumerism
• 'covariables', such as school size, student-body composition, school category, urban/rural.
PROCESS
Inputs
• teacher experience
• per-pupil expenditure
• parent support
School level
• degree of a achievement-oriented policy
• educational leadership
• consensus, co-operative planning of teachers
• quality of school curricula in terms of content covered, and formal structure
• orderly atmosphere
• evaluative potential
Outputs
Student achievement, adjusted for:
• previous achievement
• intelligence
• SES
Classroom level
• time on task (including homework)
• structured teaching
• opportunity to learn
• high expectations of pupils' progress
• degree of evaluation and monitoring of pupils' progress
• reinforcement

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The choice of variables in this model is supported by the 'review of reviews' on school-effectiveness research that will be presented in the next section.

Exemplary cases of integrative, multi-level school-effectiveness studies are those by Mortimore et al. (1988), Brandsma (1993), Hill et al. (1995), Sammons et al. (1995) and Grisay (1996).

Summary of meta-analyses

In *Table 10* (cited from Scheerens and Bosker, 1997) the results of three meta-analyses and a re-analysis of an international data set are summarized. The results concerning resource input variables are based on the re-analysis of Hanushek's (1979) summary of results of production function studies carried out by Hedges, Laine and Greenwald (1994). As stated before, this re-analysis has been criticized, particularly the unexpectedly large effect of per-pupil expenditure.

The results on 'aspects of structured teaching' are taken from meta-analyses conducted by Fraser, Walberg, Welch and Hattie (1987). The international analysis was carried out by R.J. Bosker (Scheerens and Bosker, 1997, Chapter 7) and was based on the IEA Reading Literacy Study. The meta-analyses of school organizational factors and instructional conditions ('opportunity to learn', 'time on task', 'homework' and 'monitoring at classroom level'), were carried out by Witziers and Bosker and published in Scheerens and Bosker (1997, Chapter 6). The number of studies used for these meta-analyses varied per variable, ranging from 14 to 38 studies. The results in columns 2 and 3 are expressed as correlations between the input or process variable in question and student achievement in mathematics or language. Normally a correlation of 0.10 is interpreted as 'small'; 0.30 is 'medium' and 0.50 or more is 'large' (Cohen, 1969). The 'plusses' in the first column indicate that research reviews mention these factors as being positively associated with achievement.

The results in this summary of reviews and meta-analyses indicate that resource-input factors on average have a negligible effect, school

factors have a small effect, whereas instructional factors have an average to large effect. The conclusion concerning resource-input factors should probably be modified and 'nuanced' somewhat, given the results of more recent studies referred to in the above, e.g. the results of the STAR experiment concerning class-size reduction.

There is an interesting difference between the relatively small effect size for the school-level variables reported in the meta-analysis and the degree of certainty and consensus concerning the relevance of these factors in the more qualitative research reviews.

It should be noted that the three blocks of variables depend on the research method used: education production function studies depend on statistics and administrative data from schools or higher administrative units, such as districts or states; school-effectiveness studies focusing on school-level factors are generally carried out as field studies and surveys; studies on instructional effectiveness are generally based on experimental designs. The negligible to very small effects found in the re-analysis of the IEA data set may be partly attributed to the somewhat 'proxy' and superficial way in which the variables in question were operationalized as questionnaire items. An additional finding from international comparative studies (not shown in the table) is the relative inconsistency of the significance of the school-effectiveness correlates across countries, see also Scheerens, Vermeulen and Pelgrum (1989) and Postlethwaite and Ross (1992).

Table 10. Review of the evidence from qualitative reviews, international studies and research syntheses

	Qualitative reviews	International analyses	Research syntheses
Resource input variables:			
Pupil teacher ratio		– 0.03	0.02
Teacher training		0.00	–0.03
Teacher experience			0.04
Teachers' salaries			–0.07
Expenditure per pupil			0.02
School organizational factors:			
Productive climate culture	+		
Achievement pressure for basic subjects	+	0.02	0.14
Educational leadership	+	0.04	0.05
Monitoring/evaluation	+	0.00	0.15
Co-operation/consensus	+	–0.02	0.03
Parental involvement	+	0.08	0.13
Staff development	+		
High expectations	+	0.20	
Orderly climate	+	0.04	0.11
Instructional conditions:			
Opportunity to learn	+	0.15	0.09
Time on task/homework	+	0.00/–0.01 (n.s.)	0.019/0.06
Monitoring at classroom level	+	–0.01 (n.s.)	0.11 (n.s.)
Aspects of structured teaching:			
– co-operative learning			0.27
– feedback			0.48
– reinforcement			0.58
Differentiation/adaptive instruction			0.22

PART 2. EVIDENCE FROM DEVELOPING COUNTRIES

In this part of the chapter, the evidence on effectiveness-enhancing conditions for schooling in developing countries will be reviewed. The review sets out by referring to earlier review articles, in particular those by Hanushek (1995) and by Fuller and Clarke (1994). The latter study incorporates results of reviews by Fuller (1987), Lockheed and Hanushek (1988), and Lockheed and Verspoor (1991). Next a schematic description of 13 studies conducted after 1993 is provided. Conclusions are drawn about the state of the art of educational-effectiveness research in developing countries, in terms of which types of factors are studied most, how the outcomes compare with those of industrialized countries, and what are the relevant research innovations and implications for policy and practice applications.

Production function studies in developing countries

Hanushek (1995) made the following tabulation of the effects of resources in developing countries based on 96 studies (see *Table 11*).

Table 11. Summary of 96 studies on the estimated effects of resources on education in developing countries (cited from Hanushek, 1995)

		Statistically significant		Statistically insignificant
Input	**Number of studies**	**Positive**	**Negative**	
Teacher/pupil ratio	30	8	8	14
Teacher's education	63	35	2	26
Teacher's experience	46	16	2	28
Teacher's salary	13	4	2	7
Expenditure per pupil	12	6	0	6
Facilities	34	22	3	9

If the number of positive significant associations is expressed as a percentage, as in *Table 12*, then a more straightforward comparison can be made with the results shown in *Table 5*, concerning studies in industrialized countries.

Table 12. Percentages of studies with positive significant associations of resource input variables and achievement given for industrialized and developing countries

Input	**Industrialized countries** % significant positive associations	**Developing countries** % significant positive associations
Teacher/pupil ratio	15%	27%
Teacher's education	9%	55%
Teacher's experience	29%	35%
Teacher's salary	20%	30%
Per-pupil expenditure	27%	50%

Source: Hanushek, 1995, 1997

The relevance of school facilities in developing countries, not shown in the comparison, amounts to no less than 70 when expressed as the percentage of significant positive studies.

The larger impact of these resource input factors in developing countries can be attributed to larger variance in both the independent and the dependent variables. Both human and material resources in education in industrialized countries are distributed in a relatively homogeneous way among schools, i.e. schools do not differ very much on these variables. Regarding the outcome variables (e.g. educational achievement), Riddell (1997) has shown that schools in developing countries vary on average 40 per cent (raw scores) and 30 per cent (scores adjusted for intake variables). This is a considerably larger variation than is usually found in industrialized countries, where values of 10 per cent to 15 per cent variance between schools on adjusted outcomes are more common (cf. Bosker and Scheerens, 1999).

The positive outcomes of production function studies in developing countries make intuitive sense (i.e. if basic resources and facilities are not present this will obviously be detrimental to the educational endeavour as a whole). At the same time the outcomes give rise to interesting interpretations when they are brought to bear on the principles of microeconomic theory. Jimenez and Paquea (1996), for example, present findings that support the thesis that local involvement in school finance stimulates both achievement orientation and economy in spending. Their study on public primary schools in the Philippines provides evidence that efficiency gains (fewer costs, while maintaining quality standards) were obtained in settings where the community provided extra funding and schools were held accountable for this. Pritchett and Filmer (1997) point out the political advantages of spending on human resources (diminishing class size in particular) as compared to spending on instructional materials, despite the far greater efficiency of the latter approach, while Picciotto (1996) criticizes the narrow set of educational performance criteria used in most education production function research and states that "programme design must be informed by assessments of overall educational performance against societal objectives; by evaluations of the relevance of the objectives themselves and by judicious design of institutions to deliver the needed services" (ibid. p. 5). Microeconomic theory makes interesting conjectures with respect to control mechanisms in education as well; the argument is that bureaucratic control measures are expensive and faulty and that community involvement and 'direct democracy' would present a better alternative. Currently these conjectures should be appreciated for their heuristic function in stimulating further research. The evidence is not sufficiently conclusive, however, to allow for an overall assessment of consumer-based versus bureaucratic control. Moreover, outcomes are more likely to be contingent on other situational factors, such as the traditional structure of the education systems and cultural aspects.

As studies become more theory-driven, and cost-benefit analyses are more frequently included, production function research may be considered as a viable approach to school-effectiveness studies in both developed and developing countries. This is particularly true for

developing countries due to their generally lower resource levels and greater variability of school inputs.

Reviews of school-effectiveness research in developing countries

The results of the review study by Fuller and Clarke (1994) are summarized in *Table 13.*

Table 13. School input and process variables that showed significant positive associations with achievement in at least 50 per cent of the studies in developing countries, analyzed by Fuller and Clarke, 1994*

	Number of significant effects divided by the number of analyses	
School/teacher factor	**Primary schools**	**Secondary schools**
School spending		
Expenditure per pupil	3/6	3/5
Total school expenditure	2/5	–
Specific school inputs		
Average class size	9/26	2/22
School size	7/8	1/5
Availability of textbooks	19/26	7/13
Supplementary readers	1/1	2/2
Exercise books	3/3	–
Teaching guides	0/1	–
Desks	4/7	0/1
Instructional media	3/3	–
Quality of facilities	6/8	1/1
School library	16/18	3/4
Science laboratories	5/12	1/1
Child nutrition and feeding	7/8	1/1
Teacher attributes		
Total years of schooling	9/18	5/8
Earlier measured achievement	1/1	1/1
Tertiary or teacher college	21/37	8/14

In-service teacher training	8/13	3/4
Teacher subject knowledge	4/4	–
Teacher gender (female)	1/2	2/4
Teacher experience	13/23	1/12
Teacher salary level	4/11	2/11
Teacher social class	7/10	–
Classroom pedagogy and organization		
Instructional time	15/17	12/16
Frequent monitoring of pupil performance	3/4	0/1
Class preparation time	5/8	1/2
Frequency homework	9/11	2/2
Teacher efficacy	1/1	0/1
Co-operative learning tasks for students	–	3/3
School management		
School cluster membership	2/2	–
Principal's staff assessment	3/4	0/1
Principal's training level	3/4	1/2
School inspection visits	2/3	0/1
Tracking or pupil segregation	1/1	–

Source: Fuller and Clarke, 1994.
The review considered about 100 studies and drew upon earlier reviews by Fuller (1987), Lockheed and Hanushek (1988), Lockheed and Verspoor (1991) and an analysis of 43 studies in the period 1988–1992 conducted by the authors themselves.

Only studies that controlled achievement for students' family background were included; and only significant associations at the 5 per cent level were reported.

What *Table 13* indicates, first of all, is that there were more studies on primary schools than on secondary schools. Also, financial, material and human resource input variables were investigated more frequently than school and classroom process variables, with the exception of instructional time.

This predominance of relatively easily assessable input characteristics is also evident from *Table 14*, which shows the number of times a particular variable was included in a total of 43 studies.

Table 14. The number of times out of a total of 43 studies conducted between 1988 and 1992 (primary and secondary schools taken together) a particular type of school input or process variable was investigated

Enrolments/staff	
School size	6
Class size	25
Teacher variables	
Teacher training	24
Teacher salaries	3
Teacher experience	9
Teacher preparation	1
Teacher efficacy	1
Teacher gender	5
In-service training	7
Instruction	
Instructional time	13
Homework	3
Specific pedagogy	12
Testing of pupils	5
School organization	
Public/Private	4
Tracking	1
Headmaster supervision	3
Equipment and facilities	
Library facilities	3
General facilities and equipment	15

Source: Fuller and Clarke, 1994

On the basis of their review of significant positive effects, Fuller and Clarke (ibid.) conclude that rather consistent school effects can be found in three major areas: *availability of textbooks and supplementary reading material, teacher qualities* (e.g. teachers' own knowledge of the subject and their verbal proficiencies) and *instructional time and work demands placed on students*.

Policy-relevant factors that showed inconsistent or lack of effects appeared to be class size and teacher salaries.

The findings summarized in *Tables 13* and *14* once more highlight the predominance of the production-function type of effectiveness studies in developing countries. Riddell (1997), in a more methodologically-oriented review, observes that a 'third wave' of school-effectiveness research in developing countries is "in danger of being lost without ever having been explored". By this third wave she is referring to what the author has described as 'integrated school-effectiveness studies', comprising resource inputs, organizational factors and instructional characteristics, in which multi-level modelling is a vital methodological requirement.

An interesting set of suggestions, developed by Fuller and Clarke in their interpretation of the research evidence, involves paying more attention to cultural contingencies when studying school effectiveness in developing countries. Such contingencies might help to explain why certain school and classroom-level variables 'work' in one country but not in the next. They have distinguished four broad categories of cultural conditions:

(a) the local level of family demand for schooling;
(b) the school organization's capacity to respond to family demand "while offering forms of knowledge that are foreign to the community's indigenous knowledge" (Fuller and Clarke, 1994);
(c) the teacher's capacity and preferences in his or her use of instructional tools;
(d) the degree of concurrence between the teacher's pedagogical behavior and local norms regarding adult authority, didactic instruction and social participation within the school (ibid., p. 136).

These ideas, as well as the necessity of overcoming other weaknesses of school-effectiveness studies (lack of cost benefit analyses, shortage of longitudinally designed studies), have demanding implications for the design of studies. According to Riddell (1997), Fuller and Clarke fail to present clear research alternatives.

With a review of 12 more recent effectiveness studies carried out in developing countries, Scheerens (1999) has reconfirmed the predominance of the production function approach with a restatement of the importance of equipment, particularly textbooks, and the human resource factor (teacher training). According to the author, instructional and pedagogical theory appear to be practically missing as a source of inspiration for educational effectiveness studies in developing countries. In the four studies that did look into some school organizational and instructional variables, the impact of these variables was relatively low. This (limited) review of 12 studies confirms the results of an earlier review by Anderson, Ryan and Shapiro (1989), who stated that "variations in teaching practice in developing countries are only rarely found to be associated with variations in students' learning". Cultural contingencies, as referred to by Fuller and Clarke, or lack of variation in teaching practices in some developing countries, could be offered as hypothetical explanations for these outcomes.

Scope and limitations of the school-effectiveness model for educational planners

Although the integrated model of school effectiveness is comprehensive in that it encompasses input, process, output and context conditions and recognizes the multi-level structure of education systems, it has a number of limitations:

1. The model focuses on the level of the individual school, and does not address important issues concerning the proper functioning of national education systems; I shall refer to this as the *aggregation limitation*. When *subsidiarity* [2] is applied and schools are autonomous, this limitation is counterbalanced to a degree, since, by definition, the school has more formal responsibilities.

2. The model has a strongly instrumental focus, treating educational goals and objectives as largely 'given'. Extending the model according to the larger perspective of organizational effectiveness, as briefly referred to in Part I, can partly compensate for this limitation by taking into account the responsiveness of the school

2. See discussion and explanation of this concept further on.

when faced with changing environmental constraints. Again, it depends on the pattern of functional decentralization in an education system to what extent adaptation mechanisms at school level are important in comparison with provision at the macro level. We shall refer to this limitation as the *instrumentality limitation*.

3. Although the model allows for the inclusion of questions of equity and efficiency, actual research practice has not lived up to expectations in this area. Moreover, the way school-effectiveness research deals with these issues is also determined by two other limitations: level of aggregation and instrumentality. The argument is that, particularly in developing countries, these issues deserve to be dealt with from a broader perspective than that of the school-effectiveness model. This limitation will be referred to as the *relatively narrow quality orientation*.

Aggregation limitations

As indicated in *Figure 3*, which shows an 'integrated' model, school effectiveness is seen as including malleable conditions at various levels of education systems, although the bulk of these malleable conditions are situated at the school level. This focus may perhaps also be seen as a limitation of empirical school-effectiveness research. The component that includes contextual conditions is less well-developed. This component concentrates on contextual conditions that can be linked to stimulation of achievement orientation at school level. Examples are the setting of achievement standards and the stimulation of educational consumerism. The practice of reporting school performance through public media, links both. So 'standard setting' and stimulating accountability, by introducing evaluation and feedback mechanisms, are measures that should be included in the 'integrated' school-effectiveness model. Clearly this is not all that national educational planners can do to stimulate the overall quality of schooling. Other major issues include:

- privatization and decentralization;
- creating vertical coordination between levels of schooling (e.g. in the sense of ISCED levels);

- setting standards for teacher training and providing teacher training;
- providing sufficient access to schooling (which may involve trade-offs between 'quantity' and 'quality' of schooling in developing countries) and providing an equitable distribution of scarce educational resources.

The issue of decentralization deserves some further attention in this context, because it points at contexts where the importance of school-level conditions is enhanced. The malleable conditions identified by school-effectiveness research thus gain in relevance. First, the concepts of 'functional decentralization' and 'subsidiarity' will be clarified. These concepts provide a basis for determining the relative importance of the school as a decision-making level in education systems, and, moreover, provide different answers to this question depending on the particular domain of decision-making.

In the history of education in the Netherlands, the term subsidiarity has been used to refer to a specific way in which denominational pressure groups in education joined together to study the relationship between the state and corporations representing interest groups in the educational field. According to the subsidiarity principle, the state should not interfere in matters that can be dealt with by organized units of professionals. Originally, these organized units were the denominationally based corporations or pressure groups of representatives in the field of education. 'Subsidiarity' was the term preferred by the Roman Catholic denomination, while the Protestants spoke of 'sovereignty in one's own circle'. Leune (1987, 379-380) points out the corporatist nature of this kind of concept. According to the subsidiarity principle, the state only takes control when needed. A simple example of subsidiarity is that of the driving instructor, who takes over the steering of a vehicle when the trainee makes a mistake, but in all other cases quietly watches without interference. Within the context of the European Commission, the term subsidiarity is used to express the principle that what can be accomplished by the member states should not be done by the central organs of the Union.

Of course it is debatable to what extent subsidiarity should be applied to schooling or, in other words, which functions the schools could accomplish without interference from higher administrative

levels. The concept of functional decentralization helps to nuance this discussion by taking into account the fact that a system can decentralize in some domains, but not in others.

Although various classifications can be found in the literature (cf. Van Amelsvoort and Scheerens, 1997), the most commonly recognized educational domains are:

- the curriculum (including goals and standards);
- finance;
- the conditions of labour and personnel policy;
- school management;
- teaching methods;
- quality control.

A well-known pattern of functional decentralization is a liberalization of finance (e.g. block grants), management (cf. 'school-based management'), and teaching methods, accompanied by a centralized core curriculum. In actual practice it appears hard to relax central regulations concerning the working conditions of educational personnel, established through collective bargaining by trade unions.

Concerning the degree of decentralization, it is important to bear in mind that sometimes government units are merely dispersed ('deconcentration'), and decision-making authority is sometimes only partly shed ('delegation') whereas in other cases it is completely given to local bodies ('devolution') (cf. Bray, 1994).

Although the empirical evidence is scarce, there appears to be some support for the hypothesis that functional centralization on curriculum standards and assessment enhances educational performance (e.g. Conley, 1997). Setting achievement standards and assessing student achievement relate favourably to effectiveness-enhancing conditions at the school level. Having clear, accessible objectives can add to the overall purposefulness and achievement orientation of the school. It can, likewise, be seen as a supportive condition for 'instructional leadership', and, if information is properly fed back to stakeholders, as a basis for organizational learning, accountability and improved 'consumerism'.

A further hypothesis regarding developing countries is that the lower the level of schooling of parents and the poorer the catchment area of the school, the more effective these measures of functional *centralization* are likely to be.

In summary, this section has underlined that there are important categories of measures of system-level educational policy that are *not* covered by the school-effectiveness model. So the school-effectiveness approach should definitely not be seen as a panacea for all educational problems, particularly as far as developing countries are concerned.

The more systems become functionally decentralized, particularly in the pedagogical and school management domain, the more important become the malleable conditions of schooling that research has identified as stimulating effectiveness.

Instrumentality limitation

Another aspect of the school-effectiveness model is the 'goal-immanent' orientation. A function of 'goal detection' or adaptation of goals according to changing societal and contextual conditions is missing. When the school-effectiveness model is broadened in scope by taking into account additional criteria such as responsiveness, participant satisfaction and formal structure (cf. Faerman and Quinn, 1985), the situation improves. In developing countries, material support from the local community appears to be particularly important, and part of the schools' efforts should be devoted to acquiring this support.

Given its technical and instrumental orientation, the school-effectiveness model is not strongly oriented towards incentives or trade-offs between task-related and person-related interests. This is one reason to attempt to connect microeconomic theory and school-effectiveness modelling (cf. Scheerens and Van Praag, 1998).

Again, in developing countries, 'adaptability' and provision of conditions that create incentives for good performance also deserve to be dealt with at macro level.

Relatively narrow quality orientation

The school-effectiveness model is, at its core, an instrumental model of direct school outputs (as compared to more long term, societal outcomes of schooling). In other words, quality is considered in terms of technical effectiveness. Originally, school-effectiveness research was oriented towards improving education in poorer 'inner city' districts in USA cities, and many studies show a definite bias towards less 'privileged' educational contexts. Therefore the research findings have a certain relevance to the creation of more equal educational provisions. Equity is more directly addressed in studies on so-called 'differential effectiveness', where the effectiveness of a school is differentiated according to sub-groups; i.e. boys/girls and children with high/low SES backgrounds. However, these studies are scarce, and the results inconclusive. The same applies to studies on cost-effectiveness. This state of affairs underlines a previous conclusion that the school-effectiveness model inadequately addresses equity and efficiency of educational provisions at large and that, particularly in developing countries, these issues should be addressed primarily by macro-level educational policies.

Summary and conclusions

In this chapter, five strands of educational-effectiveness research have been discussed. The general conclusion that may be drawn, after reviewing the bulk of the research, is that in developed countries the impact of resource-input factors is fairly small. This outcome was interpreted against the background of relatively small variation in these variables in developed countries. On the basis of recent studies, however, human resource inputs, particularly teacher qualifications, and class size deserve reconsideration. In developing countries, the significance of resource-input factors has been established in a large proportion of studies. Several reviewers have pointed out the greater between-school differences in developing countries (Bosker and Witziers, 1996; Riddell, 1997), which could explain the differences between developed and developing countries in these research outcomes.

Compensatory programmes, school-improvement projects and studies of unusually effective schools in developed countries have concentrated on similar sets of relevant school-organizational variables. Reviewers agree on the relevance of factors such as: achievement-oriented school policy, educational leadership, consensus and co-operation among staff, opportunities for professional development of staff and parental involvement. When subjected to statistical meta-analyses, the impact of these school-organizational factors is relatively small to medium. In developing countries, these factors have been studied infrequently and the results that are available show insubstantial impact.

At classroom level, instructional and teacher-effectiveness studies have indicated medium to large effects of variables such as: time on task, content covered or 'opportunity to learn', as well as aspects of structured teaching including frequent monitoring of students' progress, feedback, reinforcement and co-operative learning. A limitation of these research outcomes is that they have not addressed learning objectives other than those based on traditional school subjects. On the other hand, such learning objectives are likely to remain relevant and these outcomes, which support a behaviouristic interpretation, are sufficiently robust to be viewed alongside constructivist perspectives on learning and instruction. Again, results depend mostly on studies done in developing countries. From the limited number of studies in developing countries that were taken into consideration, no substantial impact of instructional factors was apparent. Future research should envisage more detailed and in-depth studies of instructional variables in the context of developing countries, which would also take into consideration cultural background factors, as suggested by Fuller and Clarke (1994).

In the course of this chapter quite a few limitations of the research findings have been pointed out, including with respect to the interpretation and use of these findings in developing countries. The question of the robustness of the knowledge base on school effectiveness should, once again, be considered.

What should be noted, first of all, is that in developed countries the differences that can be directly attributed to the actual schools appear to be relatively small when expressed according to the usual social-scientific criteria for effect sizes. The 'net' between-school variance, i.e. the proportion of variance in achievement at the student level that can be attributed to attending a particular school, after adjustment for relevant background variables, is estimated to be as low as 4 per cent (Bosker and Witziers, 1996). Between-school variances in developing countries are generally much higher.

The next question is the degree to which the net between-school variance in pupils' achievement is attributable to those malleable conditions of schooling that are considered as the 'independent' variables. In the study by Brandsma (1993), a typical 'integrated' school-effectiveness study, which contains school-level and classroom-level variables, the relevant proportion was about 60 per cent. This means that a relatively large proportion of the between-school variance (say the variation between schools' average scores on a particular achievement test) is explained by variables selected on the basis of school-effectiveness models. As stated in the above, however, this between-school variance is usually only a relatively small proportion of the total variance in pupil achievement (on average about 10 per cent in industrialized countries and much larger (up to 30–40 per cent) in developing countries. An important alternative source of variance is the 'contextual' effect of e.g. the average initial aptitude of the students. Within the small margins of the variance between schools in developed countries, this appears to be a fair support for the variables proposed as hypothetical effectiveness-enhancing conditions.

In developing countries, research appears to support the common-sense notion that provision of basic resources, particularly for the most deprived schools, makes most of the difference. In this context the challenge for the future lies in more frequent and in-depth study of instructional conditions.

A final observation concerns the larger impact of factors closer to the actual teaching and learning process as compared to more 'distal' factors such as schools' organizational and environmental

conditions. From the perspective of national policy-making and planning, these results should be weighed against the efficiency of bringing about changes at a higher level in the system (which contains fewer units). If there is evidence for a positive, although small, significant impact of a particular style of school leadership, 'instructional' or 'educational' leadership as this research literature shows, a training course for head teachers could be more cost-effective than training all the teachers in the country.

Interpreting the factors considered in various strands of educational-effectiveness research as 'levers' for change and improvement requires an exploration of the relevant theory, which will be the subject of the next chapter.

III. Theory: School effectiveness and perspective on planning

Introduction: The rationality paradigm

From the review of school-effectiveness research and the integration of these research results within models, as depicted in *Figure 3*, it is clear that malleable conditions of schooling can be distinguished at various aggregation levels. Popularly stated, these lists of malleable conditions refer to 'what works' in education. In the current chapter, the question is expanded to explore the principles behind 'why' the identified factors appear to work. This brings us to the realm of theories on planning, management and organizational functioning, and basic principles that could explain effective, task-oriented behaviour in social systems.

Here, the rationality paradigm has been chosen as the framework for the discussion of planning models and the ways in which these can be related to the findings of empirical school-effectiveness research. The rationality paradigm lies at the heart of theories on planning and public policy-making.

The basic principles of the rationality paradigm are:

- goal-oriented behaviour;
- optimal choice between alternative means to reach given goals;
- recognizing that the alignment of individual preferences and organizational goals is a major issue in organizational settings.

An important distinction has to do with the question of whether goals are considered as 'given' to the social planner or designer, or whether the process of choosing particular goals is seen as part of the planning process. In the first case the approach is 'instrumental', whereas the term 'substantial rationality' (Morgan, 1986, p. 37) is

sometimes used for the latter. Stated more popularly, the instrumental approach is inherent in the phrase 'doing things right' whereas the substantial perspective asks the additional question of 'doing the right things'.

In general terms, the model that is implicitly used in school-effectiveness research fits the economic rationality model quite well (see *Chapter I*). Economic rationality applies the rationality paradigm to the organization's production process, and is therefore also frequently referred to as the productivity model. The basic means-to-end relationships considered in the productivity model are situated in the 'primary' or work process of the organization. This is also the case of economically-oriented research on 'education production functions' (Monk, 1992), as well as of educational productivity schemes that largely depend on research into teaching and learning environments (Walberg, 1984); (see *Chapter II*).

Usually, in school-effectiveness research, the instrumental interpretation of the rationality paradigm is implicitly chosen, since basic school competences to be acquired by pupils are usually considered as the given criteria for evaluation of effectiveness.

Merely classifying school-effectiveness research in terms of the rationality paradigm in itself, does not help very much in our search for the underlying principles or mechanisms that could explain why certain conditions or factors appear to 'work' in education. It should be noted, however, that the rationality paradigm is not just an analytical tool to *describe* social reality, but also has very strong *prescriptive* connotations. Depending on the particular interpretation of the overall paradigm, specific principles are emphasized as conducive to the improvement of the effective functioning of organizations. Three of these principles will be discussed and can be labelled as follows:

- 'plan synoptically and structure formally';
- 'align individual and organizational goals by creating market conditions';
- 'plan retroactively by means of proper evaluation and feedback'.

Organizational types that are related to these three principles are, respectively: the bureaucracy, the autonomous or 'privatized' school, and the school as a learning organization. The theoretical backgrounds are: 'classical' planning theory and scientific management, public choice theory, and cybernetics.

Synoptic planning and bureaucratic structuring

Formally, the 'pure rationality model' (Dror, 1968) enables the calculation of the optimal choice among alternatives after a complete preference ordering of the 'end states' or possible goals of a system has been made. This ideal is approached in mathematical decision theory, as in game theory, where different preference orderings of different actors can also be taken into account. For most 'real life' situations of organizational functioning, the assumptions of pure rationality are too strong, however. Simon's (1964) construct of 'bounded rationality' modifies these assumptions considerably by recognizing that the information capacity of decision-makers is usually limited to taking into consideration just a few possible end states and alternative means.

Cohen, March and Olsen (1972) and March and Olsen (1976) go even further in criticizing the descriptive reality of the pure rationality model. Cohen et al. (1972) describe organized anarchies as characterized by 'problematic preferences', 'unclear technology' and 'fluid participation'. With respect to problematic preferences, they state that the organization can "better be described as a loose collection of ideas than as a coherent structure; it discovers preferences through action more than it acts on the basis of preferences" (ibid., p. 1). Unclear technology means that the organization's members do not understand its production processes and that the organization therefore operates on the basis of trial and error. When there is fluid participation, participants vary in the amount of time and effort they devote to different domains of decision-making (ibid., p. 1).

According to Cohen et al., decision-making in organized anarchies is more like rationalizing after the fact than rational, goal-oriented planning. They see educational organizations as likely candidates for

this type of decision-making. In terms of co-ordination, organized anarchies have a fuzzy structure of authority and little capacity for standardization mechanisms.

Another implication is a loose connection between individual action and organizational action, as internal individual action may be guided by principles other than the production of substantive results (e.g. allocating status, defining organizational truth and virtue).

Despite all these limitations concerning the descriptive reality of rational decision-making and planning in organizations, even the most critical analyses leave some room for the possibility of shaping reality in accordance with the core principles. The first type of activity that could bring this about is 'synoptic' planning.

Ideally, the aim of synoptic planning is to conceptualize a broad spectrum of long-term goals and possible means of attaining these goals. Scientific knowledge about instrumental relationships is thought to play an important role in the selection of alternatives. Campbell's (1969) notion of 'reforms as experiments' combines a rational planning approach to social (e.g. educational) innovation with the scientific approach of (quasi-)experimentation. The general idea of linking school-effectiveness research to school improvement, where the results of school-effectiveness research are seen as guidelines for school-improvement projects, also fits the idea of rational, synoptic planning quite well. Other educational applications of the idea of synoptic planning are prescriptive models of instructional design, such as the famous Tyler model (Tyler, 1950), and off-springs such as the model developed by Gage, teaching models such as the model of 'direct instruction' (see Creemers, 1994) and frameworks for school development planning (Hargreaves and Hopkins, 1991).

The main characteristics of synoptic planning as a prescriptive principle conducive to effective organizational functioning, when applied to education, are:

- a 'proactive' statement of goals and careful deduction of concrete goals, operational objectives and assessment instruments;

- a careful arrangement of subject matter, creating sequences in a way that intermediate and ultimate objectives are approached systematically;
- alignment of teaching methods (design of didactical situations) to subject-matter segments;
- monitoring of the learning progress of students, preferably by means of objective tests.

As stated before, given the orientation towards the primary process, inherent in economic rationality, the synoptic planning approach in education applies most of all to curriculum planning, design of textbooks, instructional design and preparation of (series of) lessons.

When the ideal of rational planning is extended to organizational structure, related principles concerning 'controlled arrangements' are applied to the division of work, the formation of units and the way supervision is given shape. 'Mechanistic structure', 'scientific management' and 'machine bureaucracy' are the organizational-structural pendants of rational planning (cf. Morgan, 1986, Chapter 2). The basic ideas go back to Max Weber, who stated the principles of bureaucracy as "a form of organization that emphasizes precision, speed, clarity, regularity, reliability, and efficiency achieved through the creation of a fixed division of tasks, hierarchical supervision, and detailed rules and regulations". Educational organizations, i.e. schools and universities, are usually thought of as *not* fitting the overall image of a machine-bureaucracy. Mintzberg (1979), in fact describes a variant of the classical bureaucracy, namely the professional bureaucracy, that is specifically inspired by educational organizations. In the professional bureaucracy, formalization and standardization by rules, close hierarchical supervision and minute job specification are replaced by standardization through training and professional norms.

If one draws a comparison between the way synoptic planning prescribes effective organizational functioning and the factors identified in empirical school-effectiveness research (e.g. Sammons et al., 1995), some factors appear to fit and others not. In fact, what is striking about this list of factors (see *Table 7*), is the mixture of elements based on either bureaucratic or mechanistic principles with elements

that fit a more 'cultural', organic and participatory image of organization. 'Firm and purposeful leadership', 'unity of purpose', 'consistency of practice', 'maximization of learning time', 'academic emphasis', 'focus on achievement', 'efficient organization', 'clarity of purpose', 'structured lessons', 'clear and fair discipline', 'feedback', 'monitoring pupil performance' and 'evaluating' are all factors that fit the bureaucratic and rational planning model, whereas others such as 'collegiality', collaboration' and 'high expectations' are more in line with an organic and participatory structure.

In other conceptual models of school effectiveness, for example Creemers' (1994), important notions such as consistency, consensus and control bear a close resemblance to the overriding principles of ordered structure inherent in the bureaucratic image. Rosenshine's (1987) principles of 'direct instruction', such as 'proceed in small steps' and 'give detailed and redundant instructions', provide another case in point. In Dutch studies, where systematic school development and lesson planning were specifically studied for their possible effectiveness-enhancing potential, disappointing or ambiguous results were found (Van der Werf, 1988; Friebel, 1994).

A fascinating piece of conceptual work and related empirical investigation is provided in Stringfield's description of 'high reliability organizations' (Stringfield, 1995; Stringfield, Bedinger and Herman, 1995).

The defining characteristics of high-reliability organizations (good examples being nuclear power plants and air navigation systems) are the following:

- the notion that failures within the organization would be disastrous;
- clarity regarding goals and a strong sense of the organization's primary mission held by the staff;
- use of standard operating procedures (e.g. 'scripts');
- importance of recruitment and intensive training;
- initiatives that identify flaws (e.g. monitoring systems);
- considerable attention given to performance, evaluation, and analysis to improve the processes of the organization;

- monitoring seen as being mutual, without counter-productive loss of overall autonomy and confidence;
- alertness to surprises or lapses (the notion that small failures could cascade into major system failures);
- hierarchical structure, allowing for collegial decision-making during times of peak loads;
- equipment maintained in the highest working order;
- the fact that high-reliability organizations are invariably valued by their supervizing organizations;
- the notion that "short-term efficiency takes a back seat to high reliability" (from Stringfield, 1995, pp. 83–91).

In both the evaluation of major effectiveness-oriented improvement projects in the USA and the evaluation of a highly structured primary school programme (The Calvert-Barclay school project), evidence was found that supported the validity of the high-reliability organization's image. The Calvert-Barclay project is particularly illustrative. It describes the implementation of a highly structured and traditional academically-oriented private school programme in an inner-city school. The success of the programme in these two strongly divergent settings provides additional support for the generalizability of this structured approach.

Despite well-known critiques of the usefulness of rational planning and mechanistic structuring approaches in educational organizations (e.g. Lotto and Clark, 1986), these latter examples show that a plea can be made for formalized educational programmes, supported by structures that emphasize order, co-ordination and unity of purpose. The major challenge seems to be how to effectively combine standardized procedures and partial mechanistic structuring with conditions that are nevertheless sufficiently motivating to educational professionals and still appeal to the creative insights of all members of the organization.

Alignment of individual and organizational rationality; public-choice theory

A central assumption in the synoptic planning and bureaucracy interpretation of the rationality paradigm is that organizations act as integrated purposeful units. Individual efforts are expected to be jointly directed towards the attainment of organizational goals. In the so-called political image of organizations (Morgan, 1986, Chapter 6) this assumption is rejected: "organizational goals may be rational for some people's interests, but not for others" (ibid., p. 195). The fact that educational organizations consist of relatively autonomous professionals and loosely coupled subsystems is seen as a general condition stimulating political behaviour of the members of the organization.

Microeconomic theory describes organizational behaviour (in the case of schools: pupils, teachers and headteachers) in terms of utility functions and production functions (Correa, 1995). An important parameter is the amount of time and energy an individual organization member is willing to invest in task-related action, as opposed to other directed activity, e.g. enjoying leisure. The amount of task-related activity (e.g. time on task) of each main type of actor within a school organization can be inserted as one of the explanatory variables in an education production function. Alternatively, the importance of effect attainment can determine the utility of the task-related effort of a particular individual. From this perspective the question of how to improve organizational effectiveness can now be stated in terms of creating conditions that contribute to stimulating and rewarding organization members for task-related behaviour.

In public-choice theory, the lack of effective control by democratically elected bodies over public-sector organizations marks these organizations as particularly prone to inefficient behaviour, this being essentially caused by the leeway given to managers and officers to pursue their own goals besides serving their organization's primary mission.[3]

3. A more extensive treatment of the implications of public-choice theory for school effectiveness research is given elsewhere, Scheerens, 1992, Chapter 2.

Public-choice theory provides the diagnosis of instances of organizational ineffectiveness, such as goal displacement, over-production of services, purposefully counterproductive behaviour, 'make work' (i.e. officials creating work for each other), hidden agendas and time – and energy – consuming schisms between sub-units. When the discretionary leeway of subordinate units goes hand in hand with unclear technology, this adds to the overall fertile ground for inefficient organizational functioning: see Cohen, March and Olsen's garbage-can model of organizational decision-making, which was mentioned earlier (Cohen et al., 1972). Not only government departments but also universities are often mentioned as examples of types of organizations where these phenomena are likely to occur.

Theoretically, the remedy for these types of organizational malfunctioning would be a close alignment, and ideally even a complete union, of individual, sub-unit and organizational goals. The practical approach to this, as offered by public-choice theory, is to create external conditions that would force at least part of the inefficient divergence between individual-level and organizational rationality out of the system. For this, an appropriate lever is the creation of market mechanisms that replace administrative control. The competition resulting from these market conditions thus becomes an important incentive to make public-sector organizations more efficient. The essence of *choice* as an alternative to the bureaucratic controls that result from representative democracy, is that a completely different, more 'local' type of democracy is called for. In the latter case, most authority is vested directly in the schools, parents and students (Chubb and Moe, 1990, p. 218). In their 'proposal for reform', these authors draw a picture of an education system in which there is a lot of liberty to found schools, a funding system that is largely dependent on the success of schools in free competition for students, freedom of choice for parents, and freedom for schools to have their own admission policies.

It should be noted that the leverage point of 'choice' differs from that of synoptic planning and bureaucracy as an alternative mechanism that might explain educational-effectiveness phenomena. Whereas synoptic planning and bureaucracy focus on the design of the primary process and supportive managerial conditions in the areas of supervision and co-ordination, 'choice' brings into play external, school

environmental conditions. This means that, perhaps surprisingly, both mechanisms could theoretically be employed simultaneously. Although internal bureaucratic functioning (in the sense described in the previous section) will most likely be seen as being embedded in the larger central or state bureaucracy, this need not be the case.

Notes of criticism that have been made with respect to the 'choice' model are that: parents' choices of schools may be based on other than performance criteria (Riley, 1990, p. 558); 'choice' might stimulate inequalities in education (Hirsch, 1994); and completely autonomous primary and secondary schools may have problems in establishing a common educational level for further education (Leune, 1994). Furthermore, stringent application of market mechanisms and competition between schools is likely to create selectivity and social segregation. As the social background of parents tends to create inequality in the degree to which they are able to benefit from 'choice', the principle of equity in education is threatened. Likewise, schools may tend to select the 'best students', and schools with 'the best' student population attract the best teachers.

The following findings of empirical school-effectiveness research are in line with implications from public-choice theory:

- the stimulants of achievement orientation from the larger context, as included in the model depicted in *Figure 3*;
- the construct of instructional leadership that emphasizes production-oriented, task-related behaviour;
- the concept of pupils' 'time on task'.

These last two instances can be seen as a restatement of a favourable balance between 'overhead', 'opportunity costs' and 'shirking' on the one hand, and task-related behaviour on the other.

- Fourth and finally, public-choice theory offers a general explanation for the results of comparisons between private and public schools. Generally in developed countries, private schools appear to be more effective, even in countries where both private and public schools are financed by the state, as is the case in the Netherlands (Dijkstra, 1992).

Explanations for the alleged superiority of private schools are that (a) parents who send their children to these schools are more active educational consumers and make specific demands on the educational philosophy of schools; and (b) private schools benefit from greater internal democracy (the latter conclusion was drawn on the basis of an empirical study by Hofman et al. (1995)). A more down-to-earth explanation is that private schools are usually smaller and more cohesive than public schools. The evidence for the superiority of more autonomous schools (regardless of religious denomination or private/public status) is not very strong, however. Although Chubb and Moe (1990) claim to have proved this, their results have been criticized on methodological grounds (Witte, 1990). At the macro level, there is no clear evidence that national education systems with more autonomy for schools perform better in the area of basic competences (Meuret and Scheerens, 1995). These authors compared performance indicators, such as average achievement in reading literacy between countries with varying degrees of lower-secondary-school autonomy, and found no sign of a positive association between degree of school autonomy and performance.

The political perspective of organizational functioning and public-choice theory rightly challenges the assumption of synoptic rationality and bureaucracy that all units and individuals jointly pursue the organization's goal. The arguments and evidence concerning the *diagnosis* (inefficiency caused by a failed alignment between individual-level and organizational-level rationality) are more convincing than the *cure* (privatization, choice) as far as the effectiveness of schools is concerned. The critical factor appears to be that market forces (e.g. parents' choice of a school) may not be guided by considerations concerning school performance, such that schools may be 'rewarded' for other than efficient goal-oriented performance.

Although in many industrialized countries there are tendencies towards decentralization and increased autonomy of schools, for primary and secondary education these tendencies are stronger in the domains of finance and school management than in the domain of the curriculum (Meuret and Scheerens, 1995). The United Kingdom is a case in point, where local management of schools is combined with a national curriculum and a national assessment programme. Also, in

case studies of 'restructuring' programmes in the USA and Canada (Leithwood et al., 1995), increased school autonomy is concentrated in (school-based) management and 'teacher empowerment' whereas curriculum requirements and standards are maintained or even further articulated at an above-school level.

Stringfield (1995, p. 70) notes that several states in the USA have created new curriculum standards, as well as new, more demanding and more performance-based tests.

What remains then as a possible fruitful direction for future school-effectiveness research, as a result of this analysis of the 'political' view of organizational functioning? The market metaphor appears to be useful only in a limited sense for primary and secondary education, as governments generally see the need for a certain standardization in key areas of the curriculum in order to provide a common base for further education. At the same time, 'choice'-behaviour of the consumers of education may diverge from its objective of stimulating schools to raise their performance, and undesired side effects (more inequalities) cannot be ruled out. The critical factor appears to be that schools experience external pressures and incentives to enhance performance in key areas of the curriculum. Consumers of education, if properly informed, may well be one source for creating these conditions, but not the only source. From this perspective, and contrary to the belief of strong adherents of 'choice', consumerism could well be seen as compatible with accountability requirements from higher educational levels, as proper evaluation-feedback mechanisms, initiated from higher administrative levels, might also 'do the job'. These different external conditions that may stimulate school performance have not been the object of many empirical studies (with the following exceptions: Kyle, 1985; Coleman and LaRoque, 1990; Hofman et al., 1995) and deserve to be further investigated, including within an international comparative context. As a second area for further research, the statements about 'bad' internal functioning of public-sector organizations deduced from public-choice theory might be used as guidelines in studying unusually *in*effective schools.

Retroactive planning and the learning organization

A less demanding type of planning than synoptic planning is the practice of using evaluative information on organizational functioning as a basis for corrective or improvement-oriented action. In that case planning is likely to take a more 'step by step', incremental orientation, and 'goals' or expectations are given the function of standards for interpreting evaluative information. The discrepancy between expectations and actual achievement creates the dynamics that could eventually lead to greater effectiveness.

The main reason for considering this type of retroactive planning as being less demanding than proactive, synoptic planning is that it enables a more pragmatic and practical approach. Yet, according to March and Olsen (1976), learning from experience encounters the same fundamental limitations as rational planning.

When goals are ambiguous, as these authors assume they are, so are norms and standards for interpreting evaluative information. Another limitation is how to determine the causality of observed events. Finally, when evaluative information is contrary to established routine and vested interests it is likely to be disregarded.

The research literature on the use of evaluation research for public policy decisions confirms these limitations (e.g. Weiss and Bucuvalas, 1980). Yet these limitations and constraints can also be taken as challenges for better evaluative practices (see examples in the evaluation literature such as stakeholder-based evaluations and utility-focused evaluation).

In cybernetics the cycle of assessment, feedback and corrective action is one of the central principles. Morgan (1986, pp. 86-87) states four key principles of cybernetics, constituting a 'theory of communication and learning':

- "systems must have the capacity to sense, monitor and scan significant aspects of their environment;

- they must be able to relate this information to the operating norms that guide system behaviour;
- systems must be able to detect significant deviations from these norms;
- they must be able to initiate corrective action when discrepancies are detected".

In Morgan's statements of these key principles, the evaluation → feedback → corrective action cycles have an external orientation ('scanning the environment'). This orientation is closer to the notion of organizational responsiveness to environmental constraints than to effectiveness in the sense of productivity and goal attainment.

Regardless of the distinction between responsiveness to environmental constraints and instrumental effectiveness, it should be noted that evaluation → feedback → corrective action and learning cycles consist of four phases:

- measurement and assessment of performance;
- evaluative interpretation based on 'given' or newly created norms;
- communication or feedback of this information to units that have the capacity to take corrective action, in terms of work-related improvements or incentives/sanctions to reward/correct actors;
- actual and sustained use (learning) of this information to improve organizational performance.

In the conception of the learning organization, the question as to which structural arrangements are conducive to evaluation → feedback → improvement cycles is approached from the perspective of responsiveness to the environment. Some of the organizational conditions that are thought to be important in this context, however, also seem to apply to instrumental effectiveness. Examples are: the encouragement of openness and reflectivity, recognition of the importance of exploring different viewpoints, and avoiding defensive attitudes towards bureaucratic accountability procedures (Morgan, 1986, p. 90).

The model of the learning organization was developed in the context of "today's current fast-moving business world" (Rist and

Joyce, 1995, p. 131). Survival in a rapidly changing environment sets high demands on flexibility and the capacity to creatively anticipate the future. Although quite a few authors (e.g. Simons, 1989; Murphy, 1992; Southworth, 1994) find it quite appealing to refer to schools as 'learning organizations', the notion that this model could indeed be seen as a type of ideal school-organizational structure should not be accepted uncritically. The key question as to the appropriateness of this metaphor for schools is the dynamic complexity of the environment. In this respect there are important distinctions between educational levels. In primary and secondary education, a considerable degree of standardization relating to desired educational attainment is necessary to provide a common basis for further education. But in the area of middle-level and higher-level vocational education, too, there is an ongoing debate about whether to use a common set of key qualifications, or else a curriculum that would be more directly adaptable to, for instance, the needs of local industry. So even in these higher sectors of the education system, a considerable amount of standardization in output, possibly formalized in national examinations, will most likely be present. Given the relative stability that exists in certain areas of the school environment, the call for constant revision of norms and standards appears to be unwarranted, as would be the case with the related structural characteristics of learning organizations.

So, perhaps a more modest interpretation of the model of the learning organization is more appropriate. 'Modest' means here a set of features such as concentration on the optimization of evaluation → feedback → corrective action cycles, given a set of relatively stable performance standards, the creation of sufficient opportunities for staff development, and work-oriented consultation between staff.

The beneficial effects of 'frequent monitoring of students' progress' are part of common-sense knowledge about effectiveness-enhancing school processes. Such monitoring has also received some support from empirical school-effectiveness research, although there are quite a few studies in which this factor could not be shown to be positively associated with performance. The meta-analyses summarized in Chapter 2 show an overall positive correlation of 0.15.

From a theoretical point of view, the cybernetic principle of evaluation → feedback → action is very powerful as an explanatory mechanism of organizational effectiveness. It should be noted that evaluation and feedback also have a place in synoptic planning/ bureaucratic structure *as well as* in public-choice theory. In the former case evaluations are most likely to be used for *control* purposes, while in the latter case there would be an emphasis on positive and negative *incentives* associated with review and evaluations. The organizational perspective of the learning organization, as discussed in this section, highlights the cognitive, adaptive and learning implications of evaluations.

The action potential, or the potential for school improvement resulting from the comparison of actual performance and standards, is a central factor in dynamic system models such as those of Clauset and Gaynor (1982) and De Vos (1989). It can be concluded that in-depth empirical study of school-based evaluations and pupil monitoring, both with respect to the evaluation procedures and the impact on school-organizational functioning, deserves a high place on the agenda of theory-driven school-effectiveness research.

Summary and conclusions

Together, the three different interpretations of the rationality paradigm discussed in this chapter cover most of the correlates of effective schooling that were presented in the previous chapter. Different facets are emphasized in each one of them. The synoptic interpretation stresses a proactive structuring of all types of activities in order to 'technically' optimize task-oriented work in the school. The public-choice interpretation emphasizes conditions that stimulate schools to be task-oriented instead of being guided by the preferences of the main actors and, in this way, is more concerned with motivational aspects. The idea of retroactive planning basically points to the crucial role of gathering information for key aspects of organizational functioning and the use of this information for evaluation, feedback (both in the cognitive sense to stimulate learning and in the motivational sense by providing incentives) and corrective action.

Of these three interpretations of the rationality paradigm, it is the second (public-choice interpretation) that depends most on conditions external to the school, such as national accountability systems, the degree to which competition between schools has become institutionalized and the patterns of functional (de)centralization within the system.

When comparing the first and third interpretation, i.e. synoptic vs. retroactive planning, retroactive planning is less demanding and more modest in treating the correlates of effective schooling as blueprints for educational practice. Given the uncertainties about the solidity of the school-effectiveness knowledge base and the limitations in the focus of the bulk of empirical research (see the presentation of broader perspectives on organizational effectiveness in the first chapter), this more modest interpretation seems more sensible. Therefore, in the last chapter, which discusses application, the use of the school-effectiveness research findings will be described with respect to the design of systems and instruments for the monitoring and evaluation of education systems.

One must not accept uncritically the conclusion implied in the above, i.e. that rationalization and all its paraphernalia, such as prestructuring and creating market mechanisms and evaluation systems, is the basic principle for improving the effectiveness of schooling. Particularly when application in developing countries is concerned, the cultural bias in the research findings should not be overlooked. This cultural bias is nothing mysterious, but simply the fact that the findings of empirical school-effectiveness research have most often been obtained in settings where basic educational provisions in terms of facilities, equipment and a trained corpus of teachers were already in place.

The findings of empirical school-effectiveness studies in developing countries underline the importance of these basic educational provisions, which should take precedence over the applications based on technical rationality.

IV. Application: Use of the school-effectiveness knowledge base for monitoring and evaluation procedures

Introduction

The most straightforward application of the school-effectiveness knowledge base would be the proactive use of the results in school-improvement programmes. In this way school-effectiveness research results could provide substance for the otherwise rather *procedure*-oriented discipline of school improvement. There are indeed examples of quite successful programmes that have adapted this approach: Slavin's Success for All programme and Wang's Community for Learning project are cases in point (Slavin, 1996; Wang, 1999). What these programmes have in common is a highly structured approach to learning and instruction, with frequent monitoring of progress and feedback and, if necessary, immediate remedial action.

For the reasons that were presented in the previous chapter, and particularly when considering application in developing countries, it seems better to concentrate on a more prudent use, which comes down to using the school-effectiveness knowledge base to shape monitoring and evaluation procedures. This is the type of application that will be elaborated in this chapter.

Nevertheless, since the general principles that have emerged from more than three decades of educational-effectiveness research are fairly solid, the more ambitious proactive application will be dwelt upon briefly.

From these general principles the following tentative suggestions for educational projects in developing countries could be derived:

- describe the general conditions of education on the basis of a core set of indicators, including poverty conditions per region, participation rates and the availability of basic resources;
- at early stages of development emphasize conditions that stimulate intended participation levels and basic resources and facilities (e.g. buildings, classroom);
- invest in substantive educational programmes containing four well-integrated parts: a national examination or assessment programme, national curriculum priorities in core subjects, teacher training (focused at subject-matter mastery *and* instructional principles) and a national monitoring system;
- functionally decentralize school management, as well as create opportunities for local participation and control over financial conditions and teachers' conditions of labour;
- use different media (distance education, training courses, model curricula, school self-evaluation) to enhance classroom management, effective learning time and structured teaching (with diagnosis, feedback and immediate remedial action at its core) and to stimulate active learning;
- adapt these general instructional conditions to aspects of the local culture.

In the rest of the chapter, evaluative applications will be focused upon. Education indicators and school self-evaluation will be considered as the main categories. In the course of the presentation it will become clear that there are many hybrid forms and combinations possible between internal and external evaluation and that synergy can exist between system-level monitoring, large-scale programme evaluation and school self-evaluation. School-level process indicators, selected using the school-effectiveness knowledge base, have their place in each of these forms of evaluation.

Indicators

Educational indicators are statistics that allow value judgements to be made about key aspects of the functioning of education systems. To emphasize their evaluative nature, the term 'performance indicator' is frequently used.

Included in this definition of educational indicators are:

- the notion that we are dealing with measurable characteristics of education systems;
- the aspiration to measure 'key aspects', be it only to provide an "at a glance profile of current conditions" (Nuttall, 1989) rather than an in-depth description;
- the requirement that indicators show something of the quality of schooling, which implies that indicators are statistics that have a reference point (or standard) against which value judgements can be made.

Usually policy-making at national level is considered to be the major source of application of indicators (indicator systems as policy-information systems). This view on the application of indicators should be enlarged, however, since consumers and 'third parties' such as private industry, can also be seen as users of the information provided by indicator systems. Likewise, the education system at local administrative level and even individual schools could also use indicators to support policy-making (indicator systems as management information systems).

During recent decades, various types of collections of indicators, usually referred to as indicator systems, have been proposed and a sub-set of these has actually been used. Van Herpen (1989) gives a comprehensive overview of what he calls 'conceptual models of educational indicators'. For our purpose it is sufficient to outline some of the major developments in these various approaches to conceptualizing education indicator systems.

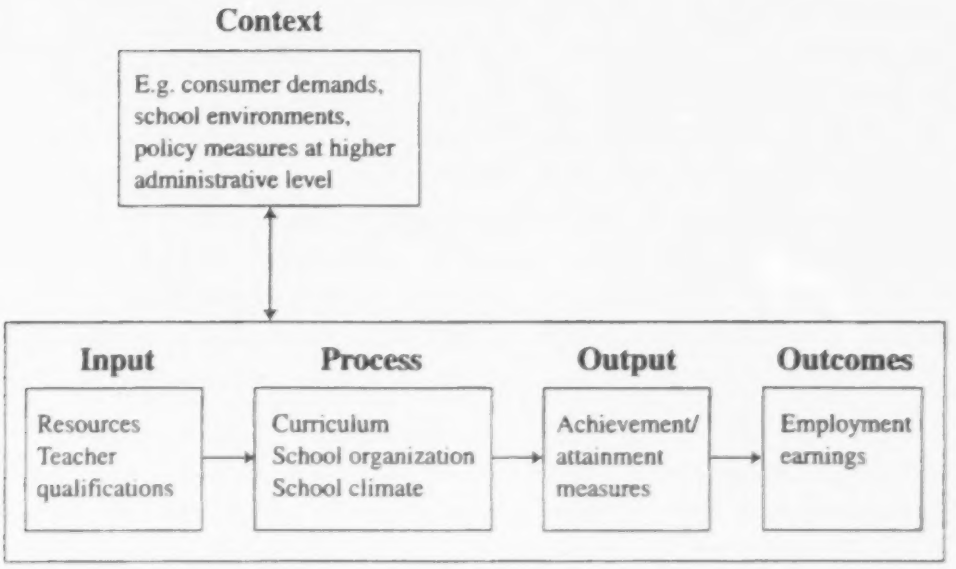
Economic and social indicators are the origin of educational indicators. 'Social indicators of education' describe educational aspects of the population, whereas educational indicators describe the performance of the education system (Van Herpen, 1989, p. 10). The first trend in the development of educational indicators was the transition from descriptive statistics to the measurement of performance, or, more generally, a shift towards statistics of evaluative importance.

If we look at developments in educational indicators at the National Center for Statistics of the USA Department of Education, we can discern a second trend. At first this centre offered descriptive statistics on the state of the education system, including data on inputs and resources. Since 1982, 'outcome' and 'context' data have been given a more prominent place, and in a proposal to redesign the education data system, 'process' aspects of the functioning of education systems have also been included (Stern, 1986; Taeuber, 1987). This second trend can thus be characterized as a movement towards more comprehensive indicator *systems*, firstly through the addition of output measures and context measures to the more traditional measurement of inputs and resources, and secondly by a growing interest in 'malleable input factors' and process characteristics.

The third trend is somewhat related to the second one, as far as the interest in process characteristics is concerned. Traditionally, indicator systems have concentrated on macro-level data, such as national illiteracy rates, the proportion of pupils that have passed their final secondary examinations, school etc. When we think of process indicators as referring to the procedures or techniques that determine the transition of inputs into outputs, this interest in process indicators naturally leads to an interest in what goes on in schools. So, the third trend in conceptualizing indicator systems is to measure data at more than one aggregation level (national system, school, perhaps even the classroom), for examples see Taeuber (1987) and Scheerens et al. (1988).

Implicit in the above is the notion that the context → input → process → output model (see *Figure 4*), that was also used in categorizing the types of factors in educational-effectiveness research, is the best analytical scheme to systemize thinking on educational indicators.

Figure 4. Context → input → process → output → outcome model of schooling



Evaluative contexts, aggregation levels and the time dimension; towards further conceptualization of educational indicators

Evaluative contexts

There are three different evaluative contexts in which educational indicators can be used:

(a) monitoring the state of education at national or district level;
(b) programme evaluation;
(c) school self-evaluation.

Sometimes indicators can be used for more than one context of application at the same time. The way the OECD indicators are used

is an example of monitoring at the national system level with the interesting added advantage of international comparative information, which can be used as 'benchmarks'.

If loans from international organizations are used for system-wide reforms or reforms in complete sub-sectors such as primary or secondary education, the programme evaluation would largely coincide with monitoring at the system level. A simple design for the evaluation of such large-scale reforms would be *two* 'inventories' of the education sector, one immediately before and one after programme implementation. It could be remarked in passing that international comparison might offer interesting possibilities for the evaluation of such projects, to the extent that the nature, context and time-frame of projects in different countries would be comparable. Another idea could be to employ some of the basic OECD indicators, in order to create international benchmarks for evaluating the success of projects.

To the extent that educational indicators are based on data collected at a lower aggregation level than the national system, namely at the level of schools, teachers and pupils, they can be used for the purposes of school self-evaluation. A simple example is feeding back information to schools, whereby schools could then compare their own position on certain indicators to national averages or other standards.

The possibility of using indicators should be seriously considered as an efficient way to improve the evaluation function in a country, thus contributing to the improvement of the education sector.

Aggregation levels

Education systems have a hierarchical structure with 'nested' administrative levels. Indicator systems usually ignore this hierarchical structure by using statistics that are defined at national level or are formal characteristics of the system. Examples are: pupil/teacher ratio computed as the ratio of all pupils and all teachers in a country, and teacher salaries defined on the basis of nationally determined salary scales.

Even when considering use of indicators at national level only, there are two main advantages to using data at lower aggregation levels:

- disaggregate data allow for examining variation between units, e.g. the variance between schools in success rates on examinations;
- disaggregate data allow for better adjustments and more valid causal inferences, the best example in education being the use of so-called 'value-added' performance indicators based on achievement-test scores adjusted for prior achievement and/or other relevant pupil-background characteristics.

If one seeks to establish a relationship between, say, school organizational characteristics and pupil achievement, disaggregate data at pupil level are required to carry out the appropriate multi-level analyses.

Particularly when indicators are used for programme-evaluation purposes, the above-mentioned advantages of disaggregate data are important, because they provide firmer ground for answering causal questions about programme effectiveness.

A final added advantage is that the relevance of indicator systems for lower administrative levels (e.g. school districts and individual schools) grows when disaggregate data are available.

Time-frame

Although there is no question that (quasi-)experimental designs should be used whenever possible (compare Campbell's famous idea of 'Reforms as Experiments', Campbell, 1969), they are often not feasible.

Using educational indicators in a longitudinal way, whereby the same units are measured at several points in time, is a viable alternative to experimentation.

The function of educational process indicators

In this section a closer look will be taken at process indicators, and those that reflect malleable conditions of basic transformation processes in education will be given a central place (see *Figure 4*). School organizational functioning, and teaching and learning at classroom level, are examples of such educational transformation processes.

In general it may be said that such process indicators shed some light on what happens in the 'black box' of schooling. Process indicators are interesting from the point of view of policy and management, since they refer to conditions that are malleable and thus the subject of active policies to improve education.

It is clear that the school-effectiveness research knowledge base is to be considered as the most likely rationale for identifying and selecting process indicators. Accordingly, process indicators will be selected that show positive associations with educational output and outcomes.

Ideally, such process indicators should be able to predict output (as in 'education production functions': increments in 'process' conditions predict increments in output according to an exact function). If such instrumental knowledge were complete, process indicators could rightly be used as substitutes for output indicators. Given the fact that the education production function is debated and, more generally, school-effectiveness knowledge is 'incomplete' to say the least (see previous chapters), such a strong instrumental interpretation is not realistic.

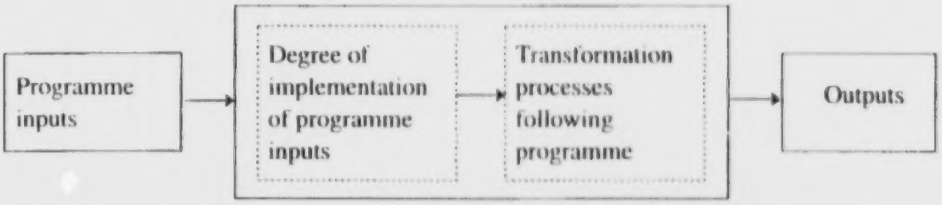
This leaves two further possibilities for the use of process indicators:

- as 'annex' to output indicators, whereby in each and every situation of their use, the association between process and output indicators would have to be explored with the intention to 'explain' differences in outcomes between schools and between education systems;

- a weaker interpretation of instrumentality, wherein process indicators would be seen as examples of educational good practice, and, in this way, could lead to value judgements about educational quality even in the absence of output data.

Within the context of programme evaluation, process indicators are sometimes defined as checks on the actual implementation of the programme. This interpretation of process indicators is easily reconcilable with the one used throughout this section. Implementation checks are a more basic and administrative type of monitoring, whereas process indicators, as defined above, refer to more generic causal processes of organizational functioning and teaching and learning. When process indicators are used over and above implementation checks, they say more about *why* an (implemented) programme works. *Figure 5* illustrates this.

Figure 5. Use of process indicators in the context of programme evaluation



When programme evaluation – as compared to 'monitoring' – is the evaluative context, both types of process indicators could be used alongside each other.

Examples of school process indicators

Community involvement

- the degree of actual involvement of parents in various school activities (the teaching and learning process, extra-curricular activities and supporting activities)*;
- the percentage of the total annual school budget that is obtained from the local community**;
- the amount of discretion local school boards have concerning the working conditions of teachers.

Financial and human resources

- average years of teachers' experience per school;
- school-level pupil/teacher ratio*;
- average class size per school*;
- proportion of formally qualified teachers per school**;
- school managerial 'overhead' (principal and deputy-principal fte per 1,000 students)*.

Achievement-oriented policy

- whether or not schools set achievement standards;
- the degree to which schools follow the careers of pupils after they have left the school;
- whether or not schools report achievement/attainment outcomes to local constituencies.

Educational leadership

- the amount of time principals spend on educational matters, as compared to administrative and other tasks*;
- whether or not principals appraise the performance of teachers**;
- the amount of time dedicated to instructional issues during staff meetings*.

* Operationalization available in OECD/INES.
** Operationalization available in Belize School Effectiveness Study.

Continuity and consensus among teachers

- the amount of changes in staff over a certain period*;
- the presence or absence of working groups or departments for different school subjects (secondary schools);
- frequency and duration of formal and informal staff meetings*.

Orderly and safe climate

- statistics on absenteeism and delinquency;
- ratings of school discipline given by principals, teachers and pupils.

Efficient use of time

- total instruction time and time per subject-matter area;
- average loss of time per teaching hour (due to organization, moving to different rooms, locations, disturbances);
- percentage of lessons 'not given' on an annual basis.

Opportunity to learn

- teacher or student ratings of whether each item of an achievement test was taught or not.

Evaluation of pupils' progress

- the frequency of curriculum-specific tests at each grade level*;
- the frequency of standardized achievement tests*;
- the actual use teachers make of test results*.

Ratings of teaching quality

- quality of instruction as rated by peers (other teachers);
- quality of instruction as rated by students.

School self-evaluation

The upsurge of school self-evaluation in European countries during the past decade has societal and scientific origins. Decentralization of education systems, as the official policy in many countries, has evoked increased interest in accountability, responsiveness and self-improvement of schools. Scientific developments have matched these trends, on the one hand through a broadening of educational evaluation methodology and, on the other, through conceptualization and research in the field of school effectiveness and school improvement. Before a more detailed underpinning of the definition of school self-evaluation is provided, a viable working definition is that school self-evaluation concerns a type of educational evaluation at school level that is initiated and at least partly controlled by the school itself.

Definition

There are four main categories of actors in all types of evaluation, including school evaluation:

A. the contractors, funders and initiators of the evaluation;
B. the (professional) staff that carry out the evaluation;
C. the persons in the object situation, that provide data;
D. the clients or users or audiences of the evaluation results.

Categories A and D will partly overlap, in the sense that contractors will almost always be 'users' as well, although they may not be the only category of users. For example, a particular department at the Ministry of Education may be contractor and user of a particular programme evaluation, although other important parties, such as Members of Parliament and the taxpayers, may also be considered as relevant audiences.

If all of these audiences are situated within the organizational unit that is the object of evaluation, we speak of internal evaluation. Even if a special unit or team is created for the evaluation within the organizational unit, but does not belong to the 'production/service

part' of the project (Nevo, 1995, p. 48), the classification of 'internal' evaluation would still apply.

Next, a distinction may be made between two types of external evaluations:

(a) when contractors, evaluators and clients are all external to the unit that is being evaluated;
(b) when the unit that is evaluated initiates and contracts the evaluation to external evaluators, and users may be either exclusively internal or both internal *and* external to the evaluation object.

Note that the distinction between internal evaluation with a specialized internal evaluation unit, and external evaluation where the unit (school) initiates the evaluation, is solely dependent on the institutional setting of the evaluator.

It is now simple to define *school self-evaluation*, namely as the type of internal school evaluation where the professionals responsible for the programme or core service of the organization (i.e. teachers and headteachers) carry out the evaluation of their own organization (i.e. the school).

This definition would also apply if school teams made use of external advisers to provide them with advice on evaluation methods etc., because the school teams would still take the responsibility of carrying out the evaluation.

The definition of school self-evaluation is analogue to the following definition of 'self-report', stated by Newfield (1990): "Self-report refers to the result produced by any measurement technique in which an individual is instructed to serve both as assessor or observer and as the object of the assessment or observation" (Newfield, 1990, p. 146).

Depending on the internal or external position of the users of the evaluation (D), school self-evaluation could be seen as improvement-oriented (internal D) or accountability-oriented (external D).

Types of school self-evaluation

(a) Degree of internal versus external orientation

School self-evaluations may vary, depending on whether they are 'spin-offs' of external evaluations or entirely internally determined. The following categories can be distinguished, varying from external to internal:

- school self-evaluations that are spin-offs from national or district-level assessment programmes, where school results are fed back to individual schools;
- school self-evaluations that serve internal and external purposes and are subject to meta-evaluation by inspectorates;
- school self-evaluations that are explicitly aimed at providing information to external constituencies as well as for school-improvement processes;
- self-evaluations that are part of improvement programmes that involve a number of schools (evaluations may have the additional purpose of assessing the effects of the school-improvement project as a whole);
- tailor-made self-evaluations of individual schools.

West and Hopkins (1997) further define evaluation orientation with respect to school improvement. They distinguish between:

- Evaluation *of* school improvement. In this case the outcomes of improvement efforts or the fidelity of process implementation are the focus. The school evaluation has a summative orientation.
- Evaluation *for* school improvement. In this case evaluation is used during the process of school improvement in order to further shape this process. The orientation is formative rather than summative.
- Evaluation *as* school improvement. In this case the evaluation and improvement processes are one and the same. Perhaps the term 'action research' best expresses this orientation. The author would interpret it as exploiting the reflexive potential of the evaluation processes. For example, the mere fact that school teams look at the priorities and methods of a search for the strong and

weak points of the school's functioning, may lead to improvement in the sense of increased awareness of educational goals and cooperation between staff.

Figure 6 combines the five external/internal orientations with West and Hopkins' distinctions as given above.

Figure 6. School self-evaluation categories determined by external versus internal orientations and the type of association of school evaluation and school improvement

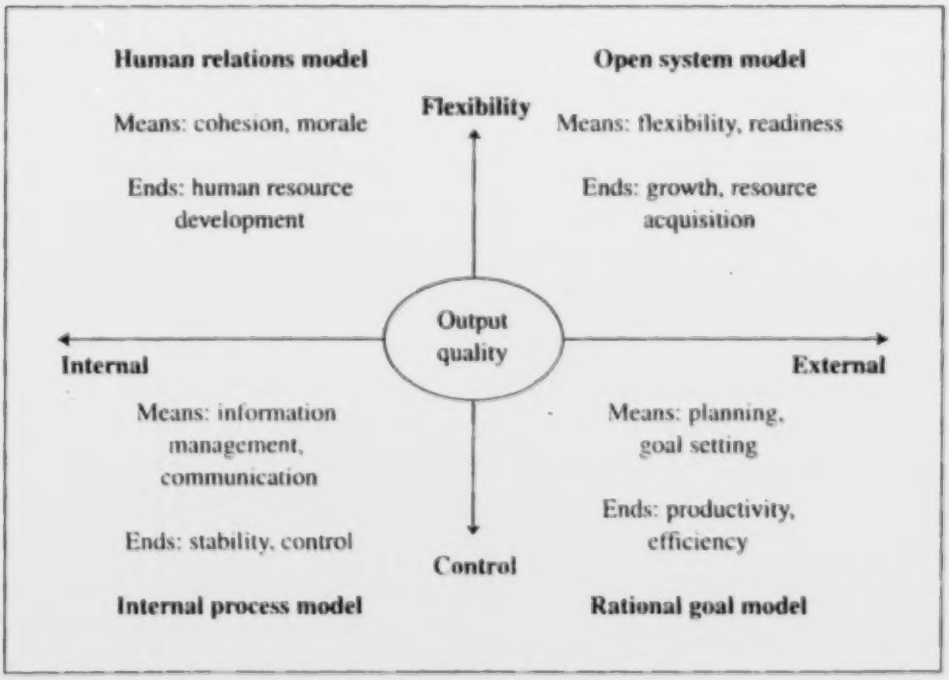
External versus internal orientation	Distinction versus integration of evaluation and improvement
School self-evaluation as spin-off of external school evaluation	
School self-evaluation for internal and external purposes, monitored from a central level (i.e. inspectorate)	
School self-evaluation for internal and external purposes	
School self-evaluation as evaluation of school-improvement programmes involving more than one school	Evaluation *of* school improvement; one design for several schools
Tailor-made self-evaluations for each school	Evaluation *of* school improvement (one school) Evaluation *of* school improvement (formative, one school) Evaluation *as* school improvement (action research, one school)

(b) Choice of criteria to assess organizational effectiveness

As was explained in detail in Chapter I, organizational-theory models like the school-effectiveness model are seen as belonging to just one of several effectiveness perspectives. The effectiveness perspective, into which the school-effectiveness model fits, is referred to as the *rational goal model*, where productivity and efficiency are the central criteria.

Alternative models are: the *open system model*, with growth and resource acquisition as effectiveness criteria; the *human relations model*, with human resource development as a central criterion; and the *internal process model*, in which stability and control are the main issues. Quinn and Rohrbaugh (1983) depict these four models as determined by two dimensions: one that represents flexibility versus control and one that represents an internal versus an external orientation (see *Figure 7* below).

Figure 7. Typology of effectiveness models.



Source: Quinn and Rohrbaugh, 1983

From this framework additional process indicators of school functioning may be generated.

As far as the rational goal model is concerned, it should be noted that this model does not specify *which* educational objectives are relevant. Besides knowledge and skills in basic school subjects, other educational aims may be recognized. Two other important categories of educational objectives are *social, emotional and moral development* on the one hand and the development of *general cognitive skills* on the other. For our purposes, these categories of educational aims (next to the basic cognitive skills focused upon in empirical school-effectiveness research) are relevant in that they may require somewhat different teaching approaches and different school organizational arrangements than the process variables that have been shown to matter in the traditional school-effectiveness models (Scheerens, 1994).

According to Goodlad and Anderson (1987), *multi-age* and *inter-age grouping* have the advantage of fostering social and emotional development as well as being effective in realizing traditional educational goals. The disadvantages of a competitive achievement-oriented atmosphere are supposed to be modified by these organizational arrangements, while the motivational disadvantages of both promoting and non-promoting as in a graded system are prevented. *Non-gradedness* and *team-teaching* are seen as ways of realizing differentiated adaptive teaching and an integrated, continuous learning route. Such approaches are thought to contribute to the degree to which students are comfortable and happy in the school.

Educational psychologists increasingly emphasize the importance of self-regulated learning and meta-cognition. 'Subject-free' cognitive skills can be developed by programmes which teach how to acquire knowledge ('learning to learn').

The *human relations model* is strongly concerned with the work satisfaction of teachers. Louis and Smith (1990) identified seven 'quality of work life indicators':

- *respect from relevant adults*, such as the administrators in the school and district, parents, and the community at large;

- *participation in decision-making,* which increases the teachers' sense of influence or control over their work setting;
- *frequent and stimulating professional interaction* among peers (e.g. collaborative work/collegial relationships) within the school;
- structures and procedures that contribute to a high sense of efficacy (e.g. *mechanisms permitting teachers to obtain frequent and accurate feedback about their performance* and the specific effects of their performance on student learning);
- *opportunity to make full use of existing skills and knowledge,* and to acquire new skills and knowledge (self-development); the opportunity to experiment;
- adequate *resources to carry out the job*; a pleasant, orderly physical working environment;
- a sense of *congruence between personal goals and the school's goals* (low alienation).

Other factors that may contribute to teachers' satisfaction are task differentiation, possibilities of promotion (though these are usually limited) and financial incentives, although this approach might prove counter-productive, according to some authors (McLaughlin and Mei-ling Yee, 1988).

The *open system model* emphasizes the responsiveness of schools with respect to environmental requirements. This means, on the one hand, that school organizations can create effective buffers against external threats and, on the other, that schools can manipulate their environments to the degree that their own functioning is not only safeguarded but also improved. In some countries (the Netherlands for instance) external regulations for schools are relaxed and school autonomy is enhanced. This state of affairs offers new possibilities, but also confronts the school with new requirements, such as conducting their own financial policy.

Demographic developments (fewer pupils) may force schools to be active in stimulating student enrolment and 'school marketing'. Developments in educational technology, initiatives for educational innovations from higher administrative levels as well as accountability requirements can be seen as additional external forces that challenge the school's readiness to change.

In a Dutch study, Gooren (1989) found evidence for a dichotomy of schools based on whether or not they could cope with these new external requirements. The schools that could cope more frequently had strong leadership or a collegial structure, in contrast to non-coping schools which corresponded to the image of the loosely-coupled, segmented school organization.

Capacities of schools to deal with an increasingly demanding and dynamic environment are described in terms such as *'the policy-making potential of school'* and *'the self-renewing capacity of schools'*. School organizational characteristics that are thought to contribute to these capacities are:

- leadership (also in the sense of entrepreneurship);
- collegiality;
- capacity for self-evaluation and learning (see for instance Morgan's image of the learning organization – Morgan, 1986, Chapter 4);
- overt school marketing activities;
- strong parental involvement;
- boundary-spanning positions;
- support of external change agents.

Proxy indicators of the success of responsiveness are enrolment figures and characteristics of buildings and equipment.

Whereas the *human relations model* is concerned with social and cultural aspects of 'what keeps organizations together', the *internal process model* reflects a preoccupation with formalization and structure. From this perspective, the following factors are of interest:

- explicit planning documents (such as school curricula, school development plans);
- clear rules regarding discipline;
- formalization of positions;
- continuity in leadership and staffing;
- integrated curricula (co-ordination over grades).

Proxy indicators of the stability of school organizations are attendance rates, the number of teaching periods not given, and figures on the continuity in staffing.

Quality indicators

The ideas for additional process indicators based on this more comprehensive treatment of organizational effectiveness are summarized in *Figure 8* (process indicators induced from the narrower model of school-effectiveness research are also included.)

Figure 8. Additional factors for process indicators generated from the Quinn and Rohrbaugh framework

Human relations model

Quality of work life indicators
- respect
- participation in decision-making
- professional interaction
- performance feedback
- opportunity to use skills
- resources
- congruence personal/organizational goals

Internal process model

- planning documents
- disciplinary rules
- management information systems
- formalization of positions
- continuity in staffing and leadership
- integrated curricula
- attendance rates
- lessons 'not given'

Open system model

- entrepreneurship
- collegiality
- capacity for self-evaluation and learning
- overt school marketing activities
- parental involvement
- boundary-spanning positions
- external change agents
- student enrolment figures
- resources (buildings, equipment)

Rational goal model

(School-effectiveness research)
- educational leadership
- success-oriented ethos
- monitoring of students' progress
- time on task
- content covered (opportunity to learn)

(Broader set of educational goals)
- non-gradedness
- team teaching
- individualization, differentiation
- continuous learning route
- time spent on social, emotional, creative and moral development
- 'learning to learn' activities
- diagnostic testing

A taxonomy of school evaluation, distinguishing methods, actors [4] and objects

When school evaluation at large – not exclusively school *self*-evaluation – is considered, and when methods are distinguished on the basis of actors and objects of the evaluation, a more extensive set of approaches can be distinguished:

Evaluation methods, when pupils are the object:

- informal procedures of evaluating learning tasks, marking [teachers];
- curriculum-tied progress tests for different subjects (i.e. unstandardized tests) [teachers];
- semi-formal presentations of completed learning tasks such as portfolios [teachers];
- authentic assessment, i.e. when pupils' progress is evaluated in natural circumstances [teachers, schools];
- pupil monitoring systems of standardized tests and assignments [schools];
- certifications (not necessarily with diploma) [central government];
- assessment tests initiated at the above-school level [local, regional or national authorities].

Evaluation methods, when teachers are the object:

- formal methods of teacher appraisal [school boards, school leaders, inspectors];
- informal methods of teacher appraisal [school boards, school leaders];
- evaluating teachers by means of observation of the quality of instruction [senior school management];
- ratings of instructional quality by students [students].

4. Actors are indicated between square brackets.

Evaluation methods, when the school (or department within a school) is the object:

- school diagnosis in the form of so-called 'GRIDS' depending on opinions and self-appraisal of school staff [school leader, department];
- school management information systems, e.g. computerized registration of absenteeism [school management and other administrative levels];
- integrated school self-evaluation systems in which assessment of school processes is combined with assessment of pupils' achievement [school management, head of department];
- so-called 'visitation committees', whereby peers (e.g. colleagues from other schools) screen and evaluate a school [unions of schools];
- accreditation, whereby an external private company screens aspects of school functioning using a formal set of standards [private agency];
- inspection, qualitative or semi-qualitative assessment by school inspectors [Inspectorate];
- school-level indicators or key data (school monitoring) [school management and other administrative levels];
- assessment and market research of the school in its relevant environments, e.g. with respect to expectations on future enrolments [external research institute];
- external school review by [private consultancy institutes].

Evaluation methods, when the system of schools is the object:

- national assessments [national government];
- programme evaluation [national government];
- inspection [national government];
- educational indicator projects [national government].

Summary and conclusions; applicability in developing countries

The presentation concerning indicators and school self-evaluation has provided a range of options for shaping the evaluation function in a country. Before returning to the main subject, i.e. the use of school process indicators identified on the basis of school-effectiveness research, a few observations will be made concerning priorities and implementation issues of this larger 'evaluation context'. Most of the evidence concerns experiences in Europe, and in particular the results of three research projects funded by the European Commission: the EEDS project (Evaluation of Educational Establishments – Van Amelsvoort et al., 1998); the INAP project (Innovative Approaches to School Self-Evaluation – Tiana (Ed.), (1999) and the EVA project (Quality Evaluation in School Education – e.g. Hingel and Jakobson, 1998). All three projects provide extensive information on case studies of school self-evaluation activities in European countries.

Reconsideration of the internal/external dimension

The EEDS and INAP projects found that in practically all the cases that were studied in five countries (Scotland, England and Wales, Spain, Italy and the Netherlands) there was a strongly *external* impetus to the school evaluation projects in question. The projects that were studied were usually hybrid forms in which both external and internal elements were present. In all cases networks of schools collaborated in school (self)-evaluation activities. Most initiatives came from above-school units, municipalities, local education authorities or regional support agencies. In all cases schools obtained external support and generally used externally developed instruments. In a minority of cases schools adapted externally developed instruments or developed their own instruments with the help of external experts.

The evidence from the EVA project gives more examples of genuine school-based initiatives, although external support is usually present in these cases as well. [5]

5. These outcomes reflect, to some extent, the focus, or sampling bias, of these studies, in which EEDS and INAP sampled self-evaluation *projects*, whereas EVA sampled individual schools in each EU country.

The reality of school self-evaluation, particularly in countries where this practice is a very recent phenomenon, is '*external evaluation with an increasing degree of school participation*' rather than genuine school self-evaluation. So far, the most common initiation and implementation strategy in Europe seems to be a spin-off from externally initiated types of school evaluation.

Nevertheless, there are other examples that are more genuinely school-based. The example, referred to earlier, of Dutch primary schools that buy their own pupil monitoring system, is a case in point. There are also some very positive experiences where schools work with external experts on setting priorities and standards for school self-evaluation (MacBeath, 1999; Scheerens, 1999). These latter examples tend towards what West and Hopkins describe as evaluation *as* school improvement (West and Hopkins, 1997).

The relevance of these experiences for developing countries is twofold:

Firstly, school self-evaluation can be initiated very well by exploiting the spin-off of external evaluations, such as national monitoring systems or evaluations of development projects. Prerequisites for such practice are that information be available at lower levels of aggregation (schools, classrooms) and that specific measures be taken to feed this information back to schools in a comprehensible way.

Secondly, the introduction of basic and simple forms of school self-evaluation into schools in developing countries can be used as a feasible and practical way to bring about a process of self-reflection and school improvement. This latter practice, however, would require a local cadre of support staff, e.g. an inspectorate.

External support

In all cases described in the EU studies, there was some kind of external support for the schools that participated in the school self-evaluation projects. The type of required support depends, as a matter of course, on the type of school self-evaluation that is chosen. The

two main areas of support are technical and management support, for the creation and maintenance of the organizational conditions required for effective use of self-evaluation. In cases where self-evaluation is largely a spin-off from external evaluations involving many schools, data will be processed and analyzed externally. Special efforts will need to be made to feed back data to individual schools in an accessible and comprehensible way. In these situations, schools would also require some guidance in the interpretation of results and application of standards and benchmarks.

When the choice and development of evaluation methods is more of a bottom-up process, schools would require technical guidance in providing a range of possible approaches, methods and instruments and in the technology of instrument development. As stated before, such collaborative activities are, to some extent, school-improvement activities in their own right as they urge school teams to collaborate in reflecting upon major goals and methods of schooling.

Management support is needed to create and maintain the organizational conditions necessary to conduct school self-evaluations. In fact the implementation of school self-evaluation is to be seen as an innovatory process, to which all principles of good practice apply, one of these being that the role of the principal is essential. Other aspects include seeking the involvement of all staff and external constituencies. A basic organizational requirement for good practice of school self-evaluation is the institutionalization of some kind of forum where staff can meet to plan evaluation activities and discuss results.

In many situations, and in addition to technical and managerial support, schools would require more substantive support in interpreting results and designing remedial and corrective actions to improve the school's functioning in weak areas. There is definitely the danger of creating an overload of evaluative information that is not fully exploited for its action potential. To put it differently, self-evaluation should not end in diagnosis but be actively used for 'therapy'.

Cost aspects

The need for external support and guidance would depend on the degree to which each school developed its own 'tailor-made' approach to school self-evaluation.

Economies of scale, if working with networks of schools and projects involving many schools, are to be considered when resources are scarce. School self-evaluation based on data feedback from existing national assessment or monitoring projects takes this principle even further.

Local support staff to guide schools in self-evaluation seems to be an unrealistic option for many developing countries. There would be a lot of potential in small-scale pilot projects, however, where the use of school self-evaluation could be implemented and studied in the specific local context. Among other applications, such experiences could be used in the design of training courses as part of the regular training of teachers and headteachers.

Experiments with in-service teacher-training activities in school self-evaluation could also be seen as long-term investments in the building of local capacity. For these stimulate the directly practical skills necessary when creating schools that can handle autonomy and self-improvement.

The micro-politics of evaluation

Since evaluations – even school self-evaluations – ultimately lead to judgements and 'valuing', some categories of actors, particularly teachers, are likely to feel threatened. Traditionally schools have functioned according to the principles of the 'professional bureaucracy' (Mintzberg, 1979), where acculturation and training in the profession is the key control mechanism and autonomous professionals are seen as opposing rational techniques of planning and monitoring.

School evaluation activities imply the potential of external control in areas that were traditionally safeguarded under the umbrella of the professional autonomy of teachers. The subsequent greater

transparency of the primary process of schooling to external parties, e.g. the principal and the school board, has implications for the balance of power within schools. In the early literature on programme evaluation, clashes between evaluation experts and practitioners were documented as the confrontation of 'two worlds' (Caplan, 1982); and such tensions cannot be ruled out even when evaluation is internal and improvement-oriented. Several authors have therefore emphasized the importance of creating non-threatening conditions for school evaluation (Nevo, 1995; MacBeath, 1999). The role of the external expert should be something like that of an adviser and 'critical friend' to the school.

School evaluation can be perceived in a context of accountability and a context of improvement. Theoretically one would expect that apprehension about evaluation would be stronger in a context of accountability than in one of improvement. In actual practice, at least in Europe, school self-evaluation often arises as a consequence, spin-off or counterbalance to accountability-oriented assessments. Reconciliation and integration of accountability and improvement orientations is more likely when the external control element, most notably the taking of sanctions, is less severe. In Europe there are examples where external accountability-oriented assessments, such as the production of league tables, actually function as the main incentive for schools to embark upon a type of self-evaluation that takes into consideration a broader spectrum of aspects of school functioning.

But even when there is no accountability at stake, and school self-evaluations are designed bottom-up, the issue of teachers feeling threatened arises. It is therefore important that school self-evaluation be clearly and explicitly introduced to all stakeholders and participants and that initial activities be experienced as intrinsically and professionally rewarding. Ultimately the relevance and use of data and application of standards for all school staff should function as the main incentive for sustained school self-evaluation.

The micro-politics of school evaluation are likely to differ according to the structure and educational culture of a country.

Therefore, no generally applicable guidelines can be given for developing countries other than the strong recommendation not to overlook the political aspects and all the repercussions they may have for issues of reliable data collection, anonymity of results, facilitation of coupling databases and good professional co-operation between teachers, principals and support staff.

When it comes to applying school self-evaluation in developing countries, the European experience of hybrid forms of external and internal school evaluation may be seen as a positive rather than a negative example.

Given the costs, the required expertise *and* the fact that in many developing countries system-level assessment and monitoring are already implemented or in a stage of development, school self-evaluation could get off the ground in the wake of these large-scale programmes.

School-effectiveness-inspired process indicators reconsidered

As stated in the above, process indicators have a place in each of the evaluative contexts described in this chapter. Their inclusion is also likely to facilitate synergy between national monitoring, programme evaluation and school self-evaluation. Even in cases where it is not technically feasible to relate process indicators causally to outcomes, they may be used as a basis for reflection on educational good practice. Information on effectiveness-related process indicators, measured at school and possibly also at classroom level, is of practical relevance. This lies in the fact that process indicators refer to malleable conditions of schooling and can thus be actively used by the relevant actors for purposes of reform and improvement.

An issue that has not been addressed so far is the methodology of measuring process indicators based on school-effectiveness research. A Dutch study (Cremers-van Wees, 1996a,b) indicated that (in the Netherlands) many available school self-evaluation systems failed to provide hard data on the reliability and validity of the instruments. On the other hand, when instruments from empirical school-effectiveness studies are used, one would expect this situation to be more favourable.

An efficient way to measure school-level process indicators is through the use of structured surveys, administered to the principal. From a methodological point of view, this approach raises some questions, however, since the data ultimately depend on self-reports which may be biased in the sense of 'social desirability'. One may circumscribe this problem by limiting questions as far as possible to factual matters, so that responses may be verified by comparing them with information from other sources, This is particularly useful when it is evident that such validation checks are actually being carried out. Other methodological solutions that could be considered include the use of so-called 'non-obtrusive measures', such as records and physical traces of relevant behaviour, and the use of multiple respondents (e.g. teacher ratings next to self-reports of principals). Within the context of school self-evaluation projects in particular, positive results have been obtained by asking pupils to rate teachers, and teachers to rate principals (Kuyper and Swint, 1996).

V. Conclusion: Implications for educational planners

Seen from the perspective of planners at national or regional levels, knowledge of what works at school level is important, even though many of the identified factors cannot be directly controlled from above. The integration of various strands of educational-effectiveness research in multi-level models of schooling constitutes an open system approach, which leaves room for more indirect forms of influence from above-school levels.

Three conclusions stand out when the concept of school effectiveness is analyzed and the available research evidence is reviewed:

- empirical school-effectiveness research addresses important areas of school functioning in its focus on those modes of schooling that make a discernible difference in the value-added performance of schools in traditional basic subject-matter areas; however there is not a complete coverage of all relevant educational goals and criteria of organizational effectiveness;
- although the results indicate that malleable conditions closer to the primary process of instruction and learning have a more substantial impact than more distal factors, this should not discourage efforts from above-school levels to improve schooling, particularly when these are designed as *indirect* measures to improve conditions for effectiveness within schools;
- despite consensus in the more qualitative reviews of the research evidence, quantitative research syntheses and international comparative studies show considerable uncertainty on the generalizibility and the actual effect sizes of the factors that are considered to work; this leads to the recommendation that educational planners do *not* use this set of factors as a uniformly prescriptive blueprint of what should happen in schools.

The rationality paradigm, a social-scientific meta-principle quite familiar to planners, was used as the underlying principle in explaining *why* the identified set of factors should work. The three different interpretations of the rationality paradigm that were taken into consideration led to three different imperatives:

- think in advance and prestructure (synoptic planning);
- create incentives for task-related behaviour (public-choice theory);
- stimulate cybernetics, i.e. evaluation-feedback mechanisms (retroactive planning).

Stimulating rationality in education using all of these three emphases was considered relevant, although a preference for retroactive planning was expressed (see below). An important qualification of this conclusion is that basic requirements in the sense of material and human resources should be in place before increase in rational techniques can be considered to start making a difference.

The notion of schools as semi-autonomous organizations that have a certain amount of control over their own effectiveness fits in very well with the policies of functional decentralization that have been applied in many countries. The subsidiarity principle, which states that all that can be done at a lower level should not be taken up at a higher level, calls for minimal control from higher levels. The pattern of functional decentralization is likely to differ between education sectors; it is, for example, more probable that the curriculum and assessment function will be centrally controlled in primary education than in upper-secondary vocational education. Creating local conditions that stimulate community and parental involvement, and enhancing the evaluation function, are seen as examples of indirect and minimal control.

Several reasons were found to focus practical applications on monitoring and evaluation procedures: the relevance of evaluation as an effectiveness-enhancing condition, uncertainties in the school-effectiveness knowledge base *and* the view of evaluation and retroactive planning as appropriate for functionally decentralized education systems. The last chapter discussed the role of process indicators, identified on the basis of school-effectiveness research,

within the context of indicator and school self-evaluation systems. Hybrid forms and combinations of these two approaches were recommended, and the cost-effectiveness of such combinations was taken into consideration.

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The school-effectiveness perspective fits quite well in settings where the education system is functionally decentralized and the role of central level policy-making and planning is being redefined accordingly. The strength of the acquired knowledge base is weighed and underlying explanatory mechanisms are discussed. The various conclusions of this consideration lead to the recommendation to apply the research findings in particular to monitoring and evaluation practice. Examples concerning national education indicator systems and school self-evaluation are provided.

The author

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